LOCAL ACTION PLAN FOR CLIMATE PROTECTION

PREPARED BY THE CITY OF ALAMEDA

CLIMATE PROTECTION TASK FORCE AND THE PLANNING AND BUILDING DEPARTMENT

As Part of the Cities for Climate Protection Campaign

Adopted by the City Council of the City of Alameda on February 5, 2008

City of Alameda Planning and Building Department
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Message from the Mayor

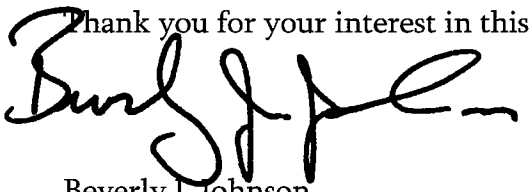
Dear Residents and Interested Community Members:

It is impossible to overstate the importance of global warming. No other issue threatens our planet with such far-reaching impacts, and no other issue is so clearly a worldwide problem. At the same time, many of the most promising solutions to global warming are local initiatives that we can control.

The City of Alameda has established a goal of reducing greenhouse gas emissions to 25% below 2005 levels by 2020. Achieving this goal will require action by government, businesses, and individuals. We know what causes global warming, and the steps to combat it are clear: reduce the use of fossil fuels. Reducing greenhouse gas emissions doesn't have to be difficult. In almost every case, it's good for the family budget and for the local economy.

We encourage you to join us in taking action on both a personal and a policy level. We will continue to examine local government activities to identify areas where we can reduce emissions from City operations. Please take an equally serious look at your own actions and search for ways to reduce emissions from your own activities. Every reduction matters, no matter how small.

Thank you for your interest in this vital issue.



Beverly J. Johnson
Mayor
City of Alameda

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Message from the Climate Protection Task Force

Dear Honorable Members of the City Council:

The City of Alameda is recognized nationally as having the lowest greenhouse gas emission rate per capita in Alameda County. Additionally, a large percentage of the energy utilized within the city is from carbon-free sources. Despite these significant achievements, there is still more that can be accomplished.

As members of the City of Alameda's Climate Protection Task Force, appointed by the Council to assist in the development of this Local Action Plan for Climate Protection, we recommend that the City Council pledge to further reduce its greenhouse gas emissions by at least an additional 25 percent by the year 2020.

In order to achieve this goal, we have developed a number of initiatives that are critical to the success of the Plan and the proposed reduction goal. We consider the following five initiatives to be the most critical of those listed in the Plan, and of the most immediate priority:

1. ***Adopt "Zero Waste Strategy" Programs and Ordinances.***
2. ***Develop a multi-faceted community outreach program to increase public awareness and participation in greenhouse gas reductions.***
3. ***Amend the Alameda Municipal Code to include sustainable design and green building standards for all new, substantially expanded, and remodeled buildings.***
4. ***Encourage the Alameda Public Utilities Board to require that Alameda Power & Telecom maintain and expand its source mix to 100 % carbon-free energy.***
5. ***Develop and fund alternative transportation strategies in the City's budget.***

It is absolutely critical that the City Council, its staff, local businesses, industries, institutions and the citizens of Alameda actively dedicate themselves to participating in and supporting these endeavors.

Sincerely,

City of Alameda's Climate Protection Task Force

I. Executive Summary

Climate Change and the "Greenhouse Effect"

The issue of climate change is frequently discussed on a national level and is a topic of worldwide news, school classrooms, and even casual conversation. The discussion of climate change is often framed by the phenomenon of what is commonly referred to as the "greenhouse effect," which is the balance of naturally occurring gases that are dispersed in the atmosphere that determine the earth's climate by trapping solar heat. The result of this effect is often referred to as global warming or global climate change. While some of the greenhouse effect is natural and necessary, because greenhouse gases play a vital role in maintaining the necessary conditions for life on earth, most scientists agree that human activities such as fuel consumption are disrupting the earth's climate by intensifying the greenhouse effect.

The world's population is releasing greenhouse gases faster than the earth's natural systems can absorb them.[1] The release of gases such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), creates a blanket around the earth that allows light to pass through but traps heat, preventing its escape into space and creating the greenhouse effect. These gases are released as by-products of fossil fuel combustion, waste disposal, energy use, physical changes to the land, and other human activities. The Intergovernmental Panel on Climate Change (IPCC) warns that most of the warming observed over the last 50 years is attributable to human activities.

Locally, in Alameda and the surrounding San Francisco Bay Area, the forecasted changes in the climate could have the following impacts:

- Rising sea levels that threaten coastal infrastructure, ecosystems, and water supplies, including Alameda's west side and its lagoon systems
- Warmer weather, resulting in longer dry spells and a decrease in Sierra snow pack that would affect fresh water availability
- Wetter weather, with an increase in annual rainfall of 20 to 30%, resulting in more serious storm events
- An increase in insect-borne diseases, such as West Nile virus, and other public health issues, such as increased rates of asthma and other pulmonary diseases

Local Actions Can Have a Significant Impact

The good news is that the subject of climate change is receiving attention at many levels, including the local level, resulting in action by local leadership. It is important to note that despite their relatively small size, cities and counties have the ability to

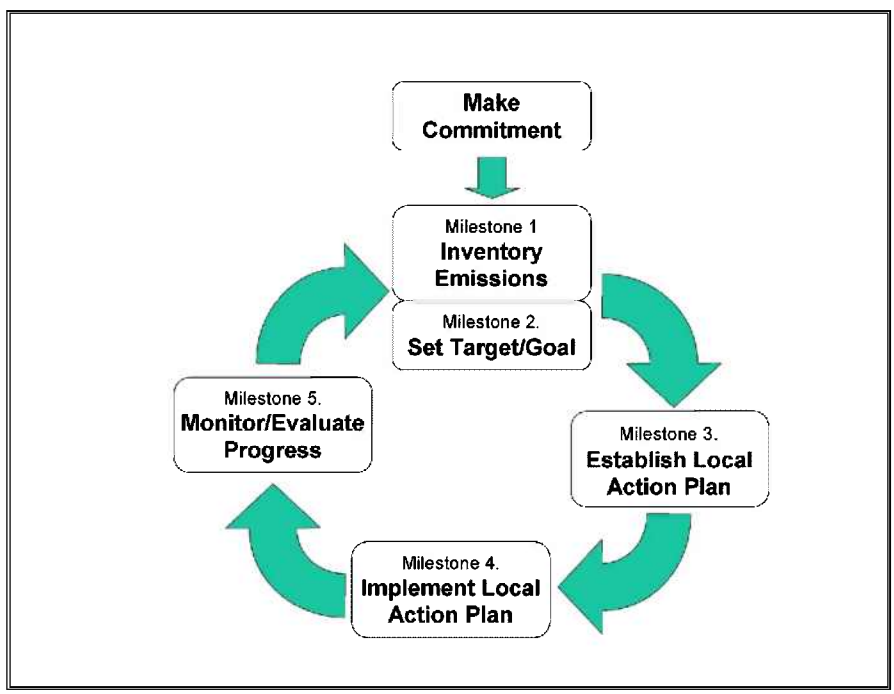
[1] Intergovernmental Panel on Climate Change (IPCC). *Climate Change 2001: The Scientific Basis*

reduce greenhouse gas emissions through effective land use and transportation planning, wise waste management, the protection of natural habitat, the efficient use of energy, and by promoting public awareness.

The residents and businesses of Alameda can take pride in the fact that in July 2006, their City Council adopted a resolution to join the Alameda County-Cities for Climate Protection Campaign. ICLEI – Local Governments for Sustainability[2] launched the campaign in partnership with the Alameda County Waste Management Authority & Recycling Board and the Conference of Mayors. Other participants include the jurisdictions of Alameda County, Albany, Berkeley, Emeryville, Hayward, Newark, Oakland, Piedmont, Pleasanton, San Leandro and Union City.

By participating in ICLEI's Climate Protection Campaign, the City of Alameda pledges to take a leadership role in promoting public awareness about the causes and impacts of climate change by accomplishing five milestones that will reduce greenhouse gas and air pollution emissions throughout the community.

Figure 1.1, Five Milestones for Municipalities



To oversee and help guide the effort involved with achieving these milestones, the City Council appointed a Climate Protection Task Force consisting of one member each from the Planning Board, Economic Development Commission, Transportation Commission, and Public Utilities Board, as well as a representative from Alameda County Industries and four public members at large. As a result of the considerable

[2] http://www.iclei.org

work of the Task Force, the City of Alameda has made significant progress on the first three milestones, including the development of this Local Action Plan, which completes Milestone 3. The five milestones are described in more detail in Chapter II of this report.

Structure of the Local Action Plan

The Local Action Plan contains five chapters:

- Chapter I is the Executive Summary.
- Chapter II is an introduction to climate change, some examples of its impacts at both the global and local levels, and a summary of past actions and future steps to be taken by the City of Alameda in addressing the issue.
- Chapter III discusses the baseline inventory of City and community-wide greenhouse gas emissions, and proposes a series of goals, which are defined by an overall goal of reducing community-wide emissions by 25% below 2005 levels[3] by 2020.
- Chapter IV describes the initiatives developed by the Climate Protection Task Force to accomplish the overall goal of reducing emissions.
- Chapter V describes the steps necessary to implement the plan and monitor the community's progress towards its goals.

Key Highlights and Findings

- The City of Alameda's 2005 greenhouse gas emissions baseline inventory reveals that Alameda generated approximately 303,097 carbon dioxide equivalent units (eCO_2)[4] that year.

- Alameda is expected to generate 329,867 eCO_2 by 2020 if the population grows at a rate of 0.65% annually.[5]

- 54% of greenhouse gas emissions are transportation related and are caused by the combustion of fossil fuels.

- 29% of greenhouse gas emissions are related to heating, cooling, and lighting residential uses, and 17% result from commercial uses.

- Alameda sent approximately 59,024 tons of solid waste to landfills in 2005.

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[3] 2005 was chosen as a baseline year because sufficient data was available in a broad range of categories to develop the baseline data inventory

[4] Emission levels are reported in equivalent carbon dioxide (eCO_2) units because CO_2 is the most significant greenhouse gas in terms of emissions, and it can be used as the standard. Converting all emissions to carbon dioxide units allows for comparison between greenhouse gases of varying strengths.

[5] The growth rate is a projection developed by the Association of Bay Area Governments that estimates population growth based on potential for land use, economic development and housing.

- About 84% of Alameda Power & Telecom's power mix is from carbon-free sources.
- The City of Alameda has a wide set of programs and initiatives in place that make Alameda a leader in the area of sustainable practices.

Initiatives and Target Emissions Reduction Goal

Since its formation, the Climate Protection Task Force has worked toward identifying multiple initiatives that will help Alameda achieve its overall goal of reducing community-wide emissions by 25% below 2005 levels[6] by 2020. These initiatives have been organized into four categories, which include: 1) transportation and land use; 2) energy; 3) waste and recycling; and 4) community outreach and education. The initiatives are outlined and discussed in Chapter IV of this document.

Working Toward Community Goals

The primary purpose of the Local Action Plan is to reduce Alameda's greenhouse gas emissions. However, through the development and implementation of this Plan, the City of Alameda will also make progress toward related community goals, as discussed in Appendix D.1.

Figure 1.2

Community Goals Achieved by Greenhouse Gas Emission Reduction	
* **Improving livability of community and quality of life**	- Reduction of automobile dependency will decrease traffic congestion - Encouraging walking and biking can improve public health - Planting trees can cool summer air temperatures
* **Reducing air pollution**	- Decreases associated health risks
* **Saving resources**	- Using fuels and electricity more efficiently can lower operating costs, making funding available for other purposes - Redirecting the waste stream into composting, reusing, and recycling reduces upfront costs associated with creating virgin products, saving natural resources
* **Securing the energy supply**	- Reducing dependency on other countries for petroleum and its products, such as gasoline, helps safeguard against potential disruptions in supply

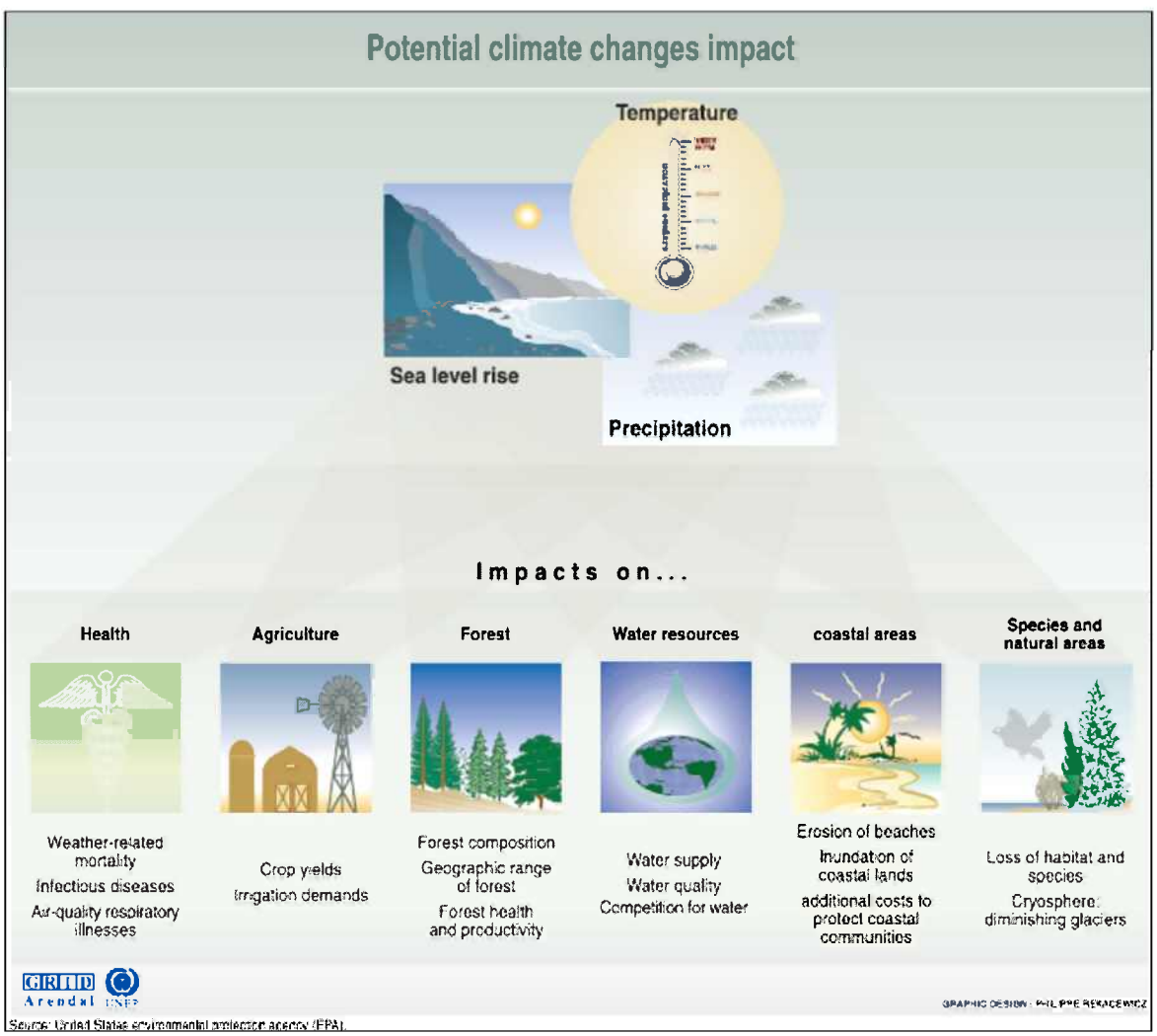
[6] 2005 was chosen as a baseline year because sufficient data was available in a broad range of categories to develop the baseline data inventory

II. Introduction

Climate Change: A Global Phenomenon that Impacts the Local Level

The Intergovernmental Panel on Climate Change (IPCC) reports that human behavior is accelerating climate change. The release of carbon dioxide (CO_2) into the atmosphere from burning fossil fuels in power plants and for transportation purposes, the loss of forests that sequester CO_2, and methane (CH_4) emissions from landfills are the chief human causes of climate change. These emissions are referred to collectively as "greenhouse gases."

Figure 2.1

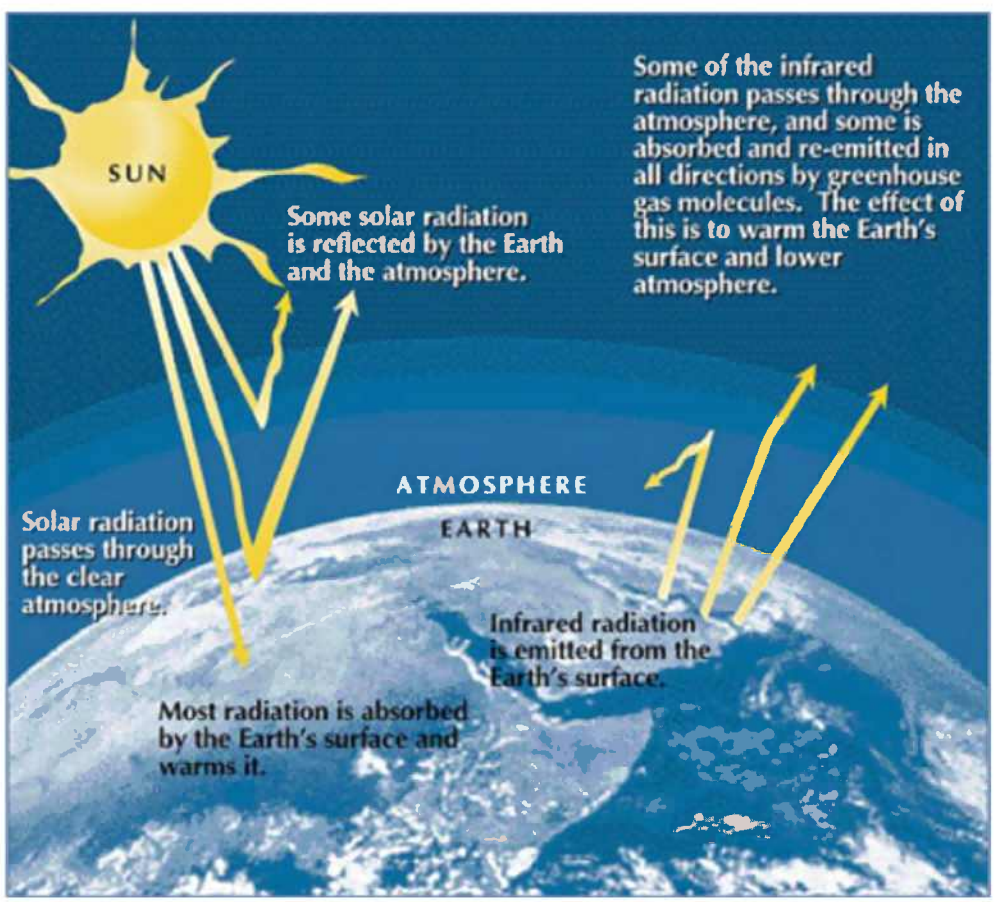


The gases of greatest concern are carbon dioxide, methane, nitrous oxide (N_2O), and halocarbons (non-metallic carbon compounds in the air). Carbon dioxide, produced primarily through burning gasoline, natural gas, coal, and oil, contributes to an estimated 82% of all U.S. greenhouse gas emissions. About three-quarters of the

carbon dioxide emissions produced by human activity during the past 20 years are due to the burning of fossil fuels. The United States has the highest per capita emissions of greenhouse gases in the world, at 22 tons of carbon dioxide per person per year. With only 5% of the world's population, the United States is responsible for 24% of the world's carbon dioxide emissions. California, despite its strong environmental regulations, is the second largest greenhouse-gas producing state in the nation after Texas, and emits 2% of global human-generated emissions. California's largest contribution of carbon dioxide is from vehicle emissions.[7]

The greenhouse effect refers to the phenomenon by which the earth's atmosphere traps solar radiation, or heat. Gases in the atmosphere operate like glass panels on a greenhouse that let electromagnetic radiation (light) through, but trap thermal radiation (heat) in.

Figure 2.2


SUN
Some solar radiation is reflected by the Earth and the atmosphere.
Some of the infrared radiation passes through the atmosphere, and some is absorbed and re-emitted in all directions by greenhouse gas molecules. The effect of this is to warm the Earth's surface and lower atmosphere.
ATMOSPHERE
EARTH
Solar radiation passes through the clear atmosphere.
Infrared radiation is emitted from the Earth's surface.
Most radiation is absorbed by the Earth's surface and warms it.

[7] Sources: Energy Information Administration: World Carbon Dioxide Emissions from the Consumption and Flaring of Fossil Fuels, 1992-2001, U.S. Census Bureau: Countries Ranked by Population: 2001

This natural greenhouse effect helps keep the earth's average temperature constant. Without the greenhouse effect, the earth's temperature would be approximately 0°F, and the planet would be largely uninhabitable.

The climate change problem has developed as human activities have added growing amounts of carbon dioxide and other greenhouse gases to the atmosphere, thereby increasing the natural greenhouse effect. The more greenhouse gases increase, the more heat is trapped. If the trend continues through this century, carbon dioxide concentration will rise to levels not seen on earth for 50 million years.

Emissions of methane account for just under 10% of U.S. emissions and result from decomposing landfill waste, manure and fermentation from livestock, and natural gas systems. Nitrous oxide is emitted through fertilizers.[8]

Scientists believe that the earth has a finite capacity to absorb and potentially neutralize emitted greenhouse gases. Once the levels of greenhouse gases overpower earth's climate systems, they will accelerate global warming beyond the rate at which it is occurring today.

Signs of Ongoing Climate Change

Climate change is a local problem with serious impacts for the San Francisco Bay Area, especially in bayside communities such as Alameda. Signs of ongoing climate change include:

- Rising sea levels, caused by warming of average ocean temperatures and the widespread melting of snow and ice. Calculations estimate that the rise in global sea level could range anywhere from approximately one to three feet by the end of 2100.[9]

  Potential Local Impacts: Protected bayside areas, infrastructure, and property may be threatened. In California, the sea level is expected to rise up to 12 inches in the next 100 years, resulting in the erosion of beaches, bay shores, river deltas and marshes, and damage to infrastructure at or near sea level, such as harbors, bridges, roads and local airports. A rise in sea level would also cause increased salinity in estuaries, marshes, rivers and aquifers. [10] [11] Almost every home and business in Alameda is within five feet of the mean high tide line and could be impacted by rising sea levels and the ebb and flow of the tide in the absence of dams or other retention facilities.

[8] Excerpt from City of Los Angeles, Environmental Affairs Office. 2001 Los Angeles Energy Climate Action Plan.
[9] Cayan. D., P Bromirski, K. Hayhoe, M. Tyree, M. Dettinger, and R. Flick. 2006b. Projecting future sea level. (www.climatechange.ca.gov/).
[10] Union of Concerned Scientists/Ecological Society of America, page 1.
[11] Neumann, James E. for the Pew Center on Global Climate Change. Sea Level Rise and Global Climate Change: A Review of Impacts to the US Coasts. February 2000.

- **Unpredictable weather**, with climate models predicting a 4°F temperature increase in the next 20 to 40 years.[12]

  Potential Local Impacts: The change in duration of weather cycles is likely to result in longer dry spells and an increase of concentrated precipitation in the spring and fall by 20-30%. Heavier rainfall can cause flooding and mudslides, resulting in damage to property and infrastructure. Increased storm activity, together with rising sea levels, could increase beach erosion and undercutting.

- **A decrease in the quantity of fresh water**, resulting from changing temperatures. With warmer average temperatures, more winter precipitation will fall in the form of rain instead of snow, shortening the winter snowfall season and accelerating the rate at which the snow pack melts in the spring.

  Potential Local Impacts: Warmer winters, with shorter winter snowfall seasons, accelerate the rate at which the snow melts in the spring. An increased snow melt increases the threat of spring flooding and decreases the Sierras' capacity as a natural water reservoir, resulting in decreased water availability for agricultural irrigation, hydro-electric generation, and the water needs of a growing population during the rest of the year. The decrease in snow-pack is particularly relevant in California and the Bay Area, as the Sierra snow-pack provides approximately 80% of California's annual water supply. Alameda's water supply has its origin in the Mokelumne River watershed of the Sierra Nevada mountain range. Alameda Power & Telecom receives much of its hydrological power supply from this watershed, and hydroelectric power supplies approximately 10% of the city's power.

- **Negative effects on native plant species and animals** could result from the warmer temperatures. Scientists report that more species are moving to higher elevations or more northerly latitudes in response to the effects of increased temperatures.

  Potential Local Impacts: A significant change in local climate can destroy native plant and animal habitat. The increased flow and salinity of water resources could also seriously affect the food web and spawning of fish. In addition, the natural cycle of plants' flowering and pollination, as well as the temperature conditions necessary for a thriving agriculture could be negatively impacted. For instance, climate change could result in a significant economic impact due to reduced productivity of perennial crops such as grapes. In California, the Farm Bureau estimates the impact of climate change

[12] Cayan, D., E. Maurer, M. Dettinger, M. Tyree, K. Hayhoe, C. Bonfils, P. Duffy, and B. Santer. 2006a. Climate scenarios for California. (www.climatechange.ca.gov/).

on agriculture to be $30 billion, mostly due to changes to operating methods, such as heating and chilling cash crops during the growing season.

- Public health consequences from an increase in mosquito-breeding and mosquito-borne diseases, such as the West Nile Virus. Heat waves are also expected to have a major impact on public health. Increased temperatures coupled with high concentrations of ground-level ozone and other air pollutants may lead to increased rates of asthma and other pulmonary diseases.

  Potential Local Impacts: The incidence of bad air days in California's urban areas has increased, mostly during summer months. During hot, stagnant days, ground level ozone can build up to levels that violate federal and state health-based standards. In the summer of 2006, the Bay Area Air Quality Management District (BAAQMD) registered 11 Spare the Air days, which are implemented when air quality is forecast to be unhealthy due to high ozone levels. Also, in the summer of 2006, the California one-hour standard for ozone was exceeded 18 times in the Bay Area.[13]

The City of Alameda's Commitment to Sustainability

It has become increasingly apparent that global climate change is and will continue to pose serious risks to Alameda's climate, sea levels, native wildlife, and public health. It may seem unlikely that actions taken at the local level could have an effect on a problem of such great magnitude. But it is important to note that despite their relatively small size, cities and counties have the ability to reduce greenhouse gas emissions through effective land use and transportation planning, wise waste management, the protection of natural habitat, and the efficient use of energy to achieve a larger cumulative change.

The momentum for taking action locally has increased in recent years, and the residents and businesses of Alameda can take pride in the fact that in July 2006, their City Council adopted a resolution to join the Alameda County-Cities for Climate Protection Campaign (Appendix A). ICLEI – Local Governments for Sustainability[14] launched the campaign in partnership with the Alameda County Waste Management Authority & Recycling Board and the Conference of Mayors. By participating in ICLEI's Climate Protection Campaign, the City of Alameda pledges to take a leadership role in promoting public awareness about the causes and impacts of climate change, and to accomplish five milestones that will reduce greenhouse gases and air pollution emissions throughout the community. To oversee and help guide the effort

[13] Westerling, A., and B. Bryant. 2006. Climate change and wildfire in and around California: Fire modeling and loss modeling. (www.climatechange.ca.gov/).

[14] http://www.iclei.org

involved with achieving these milestones, the City Council appointed a Climate Protection Task Force consisting of one member each from the Planning Board, Economic Development Commission, Transportation Commission, and Public Utilities Board, as well as a representative from Alameda County Industries and four public members at large. The five milestones are outlined below.

Five Milestones to Reduce Greenhouse Gas and Air Pollution Emissions

> *Milestone 1: Analyze current greenhouse gas emission levels to determine current emission levels and forecast the growth in emissions that will occur without preventive action.*

Chapter III of this document, *Alameda Greenhouse Gas Emissions and Reduction Target*, describes the findings of the baseline inventory conducted by ICLEI. The City of Alameda's 2005 greenhouse gas emissions baseline inventory reveals that Alameda generates approximately 303,097 carbon dioxide equivalent units (eCO_2) annually, and is expected to generate 329,867 eCO_2 by 2020 if no greenhouse gas emissions reduction initiatives are implemented. The report outlining Alameda's emissions sources and quantities is located in Appendix B.

> *Milestone 2: Set a reduction target, which is the specific reduction that Alameda aims to achieve by a designated year.*

Alameda's Local Action Plan recommends a greenhouse reduction rate target of 25% below the 2005 baseline levels by the year 2020. With the recommended initiatives, the community may be able to avoid the production of 100,596 eCO_2.

> *Milestone 3: Develop a Local Action Plan that describes policies, programs, and measures that Alameda can implement in order to meet its reduction target.*

Chapter IV, *Local Action Plan for Climate Protection Initiatives*, outlines seventeen initiatives in the areas of land use and transportation, energy, waste and recycling, and outreach and education to achieve the reduction target.

The Task Force ranked the individual initiatives as either Tier 1 or Tier 2, based on group consensus. Each initiative was modeled to evaluate the overall greenhouse gas emission reduction that could result from its implementation. The results of the modeling are included in Appendix C.

> *Milestones 4 and 5: Implement the Local Action Plan and monitor programs.*

The implementation of all initiatives could result in an overall greenhouse gas emission reduction rate of approximately 25% or 77,579 tons eCO_2 in 2020. The Climate Protection Task Force recommends that the City Council adopt a reduction

goal of at least 25% and also recommends creating a standing commission that would meet quarterly to monitor the implementation of the Local Action Plan in coordination with staff.

III. Alameda Greenhouse Gas Emissions and Reduction Target

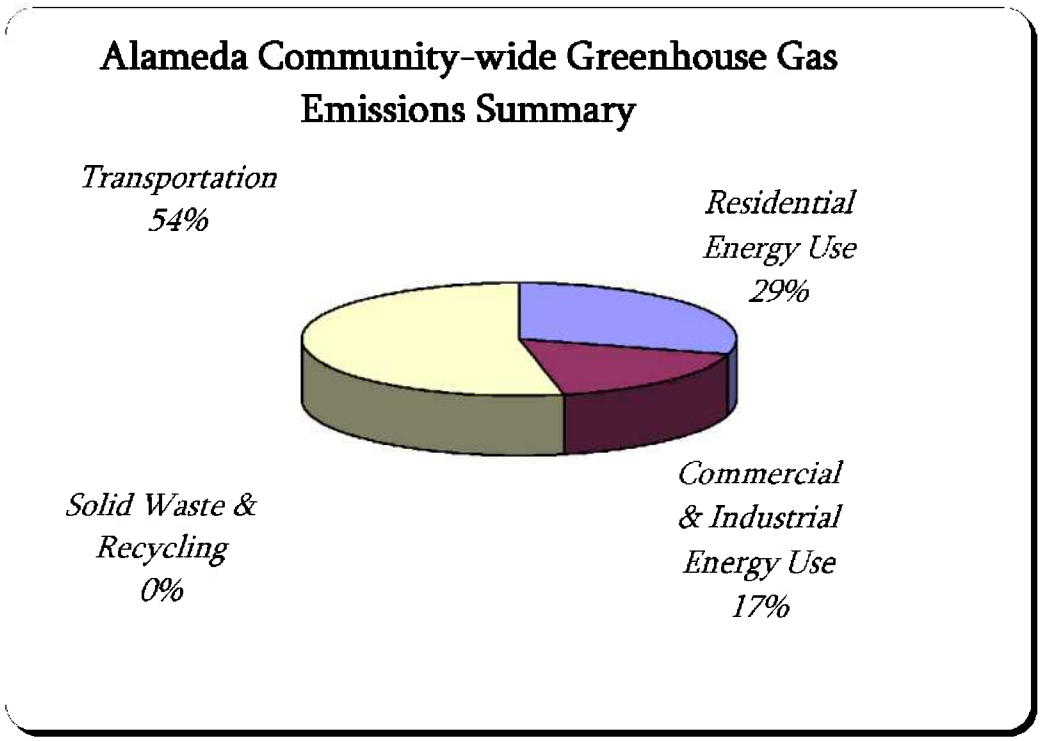
To assist local governments in quantifying greenhouse gas emissions, ICLEI – Local Governments for Sustainability and Torrie Smith Associates developed the Clean Air and Climate Protection (CACP) software package. The CACP software estimates emissions derived from energy consumption and waste generation within a community, determining emissions using specific factors (or coefficients) according to the type of fuel used. Emissions are aggregated and reported in terms of carbon dioxide equivalent units, or eCO_2. Converting all emissions to carbon dioxide equivalent units allows for the consideration of different greenhouse gases in comparable terms. For example, methane is twenty-one times more powerful than carbon dioxide in its capacity to trap heat, so the model converts one ton of methane emissions to 21 tons of eCO_2.

The emissions coefficients and methodology employed by the software are consistent with national and international inventory standards established by the Intergovernmental Panel on Climate Change (1996 Revised IPCC Guidelines for the Preparation of National GHG Emissions Inventories), the U.S. Voluntary Greenhouse Gas Reporting Guidelines (EIA form1605), and, for emissions generated from solid waste, the U.S. Environmental Protection Agency's (U.S. EPA) Waste Reduction Model (WARM).

Although the software provides Alameda with a sophisticated tool, calculating emissions from energy use with precision is difficult. The quality of the results from the model relies on numerous assumptions, as well as the quality of available data. A variety of sources provided information for the Alameda baseline inventory. Alameda Power & Telecom (AP&T) and Pacific Gas & Electric Company (PG&E) provided electricity and natural gas data. The Metropolitan Transportation Commission, Bay Area Air Quality Management District (BAAQMD), and Bay Area Rapid Transit (BART) provided transportation data. Other organizations, including StopWaste.Org, Waste Management, Inc., Alameda County Industries, and the U.S. EPA provided solid waste data.

According to the CACP software and the data inputs, Alameda generated approximately 303,097 tons of equivalent carbon dioxide units (eCO_2) in 2005. Fuel consumption in the transportation sector is the single largest source of emissions, contributing approximately 54% of total emissions. Energy use in residential sectors contributed 29%, and commercial/industrial sectors generated 17% of total emissions. The solid waste and recycling sector are not captured in this evaluation due to software constraints. The software does not balance the benefits of recycling, composting, and capturing methane with the negative impacts of emissions emitted from standard land filling waste disposal. Regionally, cities have chosen to "zero out" any solid waste and recycling numbers.

Figure 3.1


Alameda Community-wide Greenhouse Gas Emissions Summary
Transportation 54%
Residential Energy Use 29%
Commercial & Industrial Energy Use 17%
Solid Waste & Recycling 0%

** Note: The number for Solid Waste and Recycling is 0% because the software cannot calculate the benefits of recycling and composting with the negative impacts of methane emissions from land filling.*

Transportation

The transportation sector is responsible for about 54% of Alameda's greenhouse gas emissions. Motor vehicles driven within the City's geographical boundaries emitted approximately 161,395 tons of eCO_2 in 2005. [15]

The City's municipal vehicle fleet represents approximately 4.5% of citywide vehicle emissions and emits about 7,424 tons of eCO_2. The municipal fleet includes all vehicles owned and operated by the City of Alameda plus some contractor vehicles performing City functions, such as Alameda County Industries (ACI) garbage trucks.

When ICLEI conducted the baseline inventory of emissions, the ferry vessels operating from Alameda were owned by the City and leased to outside operators, and the emissions from the ferries were included in the inventory. Effective January 1, 2008, the state assumed ownership of the ferries. For future ferry emission inventories and analysis, the City will need to coordinate with the state to gather the appropriate data.

[15] Sources: Metropolitan Transportation Commission (MTC), Bay Area Air Quality Management District (BAAQMD), and Bay Area Rapid Transit (BART) served as sources of transportation data.

Energy

Stationary energy use in residential, commercial, and industrial sectors accounts for 46% of total greenhouse gas emissions in Alameda. In 2005, Alameda's stationary energy use resulted in approximately 141,701 tons of eCO_2 emissions. Residential buildings emitted 89,084 eCO_2 and commercial/industrial buildings emitted 52,617 eCO_2.[16] Major residential energy uses such as refrigeration, lighting, space heating, and water heating consumed about 137,906,700 kilowatt-hours (kWh) of electricity, or about 4,430 kWh per household, and 12,180,175 therms of natural gas, or about 391 therms per household. Commercial/industrial sector buildings consumed 223,590,100 kWh of electricity and 4,886,714 therms of natural gas.

Alameda municipal buildings and facilities consumed 9,938,888 kWh of electricity and 162,978 therms of natural gas, which resulted in a release of 2,003 tons of eCO_2 emissions into the atmosphere. Municipal streetlights and traffic lights consumed 2,056,158 kWh of electricity, which resulted in a release of 255 tons of eCO_2 emissions into the atmosphere.

Solid Waste and Recycling

According to Stopwaste.org, Alameda's recycling rate in 2005 was approximately 68 percent; the remaining 32 percent of solid waste was sent to the landfill. Once solid waste enters the landfill, it starts decomposing, which releases methane gas. In the landfill used by Alameda, approximately 74 percent of the methane is recovered, flared or perpetually contained in the landfill, and the remaining 26 percent is emitted into the atmosphere. Methane is 21 times more potent than CO_2 and therefore carries a high greenhouse gas emission "price tag."

The software used to create the baseline evaluation requires a detailed explanation regarding the calculation of solid waste and recycling. The software calculates the amount of solid waste sent to the landfill, the amount of methane gas that is captured, and the impact of methane released into the atmosphere at the landfill. Since more methane is captured than released into the atmosphere, the baseline evaluation report states that Alameda has -11,715 tons of eCO2. This calculation distorts the actual solid waste greenhouse gas emissions, since emissions cannot actually be negative. In addition to this distortion, the software is unable to properly evaluate greenhouse gas emission rates for composting, reuse, and recycling. As a result of these limitations of the software, the solid waste emissions are zeroed out. Detailed information on the methodology used can be found in Appendix C.

Overall, the benefits gained from recycling and the associated reduction in "upstream" energy use, that is, energy used to produce virgin products, far outweigh sending waste to the landfill. For example, if Alameda recycled an additional 20,000 tons of waste, then the City would reduce its annual eCO2 emissions by an additional 53,000 tons.

[16] Sources: Alameda Power & Telecom (AP&T) and Pacific Gas & Electric Company (PG&E),

Alameda Greenhouse Gas Emissions Forecast

Figure 3.2 shows the projected growth in greenhouse gas emissions by 2020. Projections are based on the assumption that energy consumption and transportation use will grow as population increases. The forecast was conducted by applying population growth factors to Alameda's base year residential, commercial/industrial, and transportation data.

The emissions forecast represents a "business-as-usual" prediction of how greenhouse gas emissions may change in Alameda over time. With an annual population growth rate of 0.65%, greenhouse gas emission levels are expected to increase by approximately 26,770 eCO_2 to 329,867 eCO_2 by 2020 under the business-as-usual projection. Municipal operations are not expected to grow by year 2020 due to projections of a relatively small population increase. This forecast takes into account the overall greenhouse gas emissions avoided through existing programs and policies that reduce emissions.

Figure 3.2

Alameda's Emissions Summary

	Community Analysis	Municipal Operations Analysis
Base year	2005	2005
Indicators used to generate forecast	0.65% (Annual population growth rate based on ABAG data)	No growth anticipated
Quantity of eCO_2 emissions in base year (tons)	303,097	9,682
Forecast year	2020	2020
Business-as-usual projection of eCO_2 emissions in *2020* (tons)	329,867	9,682

Source: CACP Model Output and ABAG

Greenhouse Gas Emissions Reduction Target

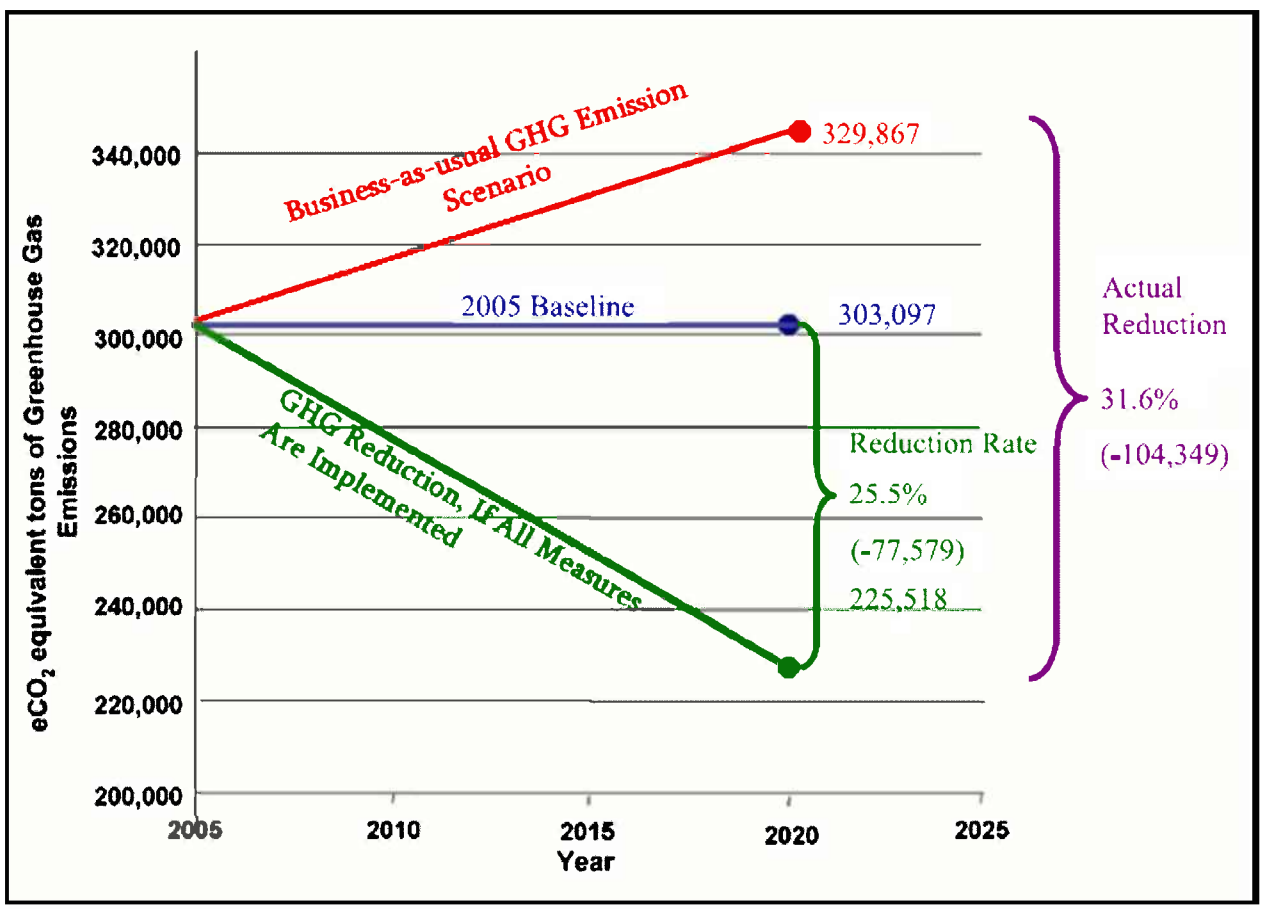
The Action Plan includes a recommended set of emissions reduction initiatives developed by the Climate Protection Task Force. The Task Force recommended initiatives by considering community preferences, existing city programs and policies, available community and City resources, and priorities. The Action Plan's initiatives to reduce greenhouse gas emissions are described in Chapter IV.

In order to develop the greenhouse gas emissions reduction target, the initiatives were modeled using the Clean Air and Climate Protection (CACP) software. This is the same computer-modeling program that was used to develop the 2005 greenhouse gas emissions baseline. Since the computer-modeling program relies on quantitative entries, a set of qualitative assumptions was developed for each initiative. These assumptions are summarized in Appendix C.

Figure 3.3 below illustrates how Alameda reached a greenhouse gas emission reduction target of 25%. If all of the initiatives are implemented, the City and community of Alameda would reduce emissions by 77,579 tons of carbon dioxide equivalent units (eCO_2). If the City achieved this level of reduction, by 2020, a decrease of approximately 25% over the 2005 baseline evaluation could be realized, as shown in Figure 3.3.

Figure 3.3 below illustrates Alameda's greenhouse gas emissions reduction target. The business-as-usual line represents the increase of greenhouse gas emissions if Alameda keeps growing and does absolutely nothing to decrease greenhouse gas emissions. The 2005 Baseline line represents the baseline emissions calculations as of 2005 and Alameda's emissions without any population growth or any implementation of emission reduction measures.

Figure 3.3, Alameda's Greenhouse Gas Emission Scenarios



The GHG Reduction line shows the potential reduction target scenario at slightly more than 25% below the 2005 baseline. In this scenario, the population increases while emission reduction programs and policies are implemented. If a 25% target rate is achieved, the actual real emission reduction is approximately 31.6% from the 2020 business-as-usual scenario.

Even with an increase in population, however, the implementation measures are long-range in nature, which could mitigate the increase of population and reduce greenhouse gas emissions to below 2005 baseline levels.

IV. Local Action Plan for Climate Protection Initiatives

The initiatives are organized into four categories to reflect the emissions inventory and reduction target described in Chapter III: 1) transportation and land use; 2) energy; 3) waste and recycling; and 4) community outreach and education.

Transportation and Land Use Initiatives

As described in Chapter III, the transportation sector is the greatest contributor to greenhouse gas emissions in Alameda. The transportation and land use initiatives are designed to: 1) reduce the number of automobile trips by implementing initiatives that encourage Alameda residents, employees, and visitors to use alternative modes of transportation, such as public transit, cycling, and walking; 2) promote land development that makes transit, bicycling, and walking more attractive alternatives; and 3) encourage the use of cleaner-running vehicles and alternative fuel vehicles.

Initiative 1:	Require that all new major developments' short and long-term transportation emissions impacts are reduced by 10%

This initiative would be implemented by the following types of measures:

- *Alameda Point transit-oriented development. Alameda Point represents a major redevelopment opportunity and challenge for the City of Alameda. The greenhouse gas emissions analysis found that a transit-oriented development pattern at Alameda Point would result in a reduction of approximately 720* eCO_2 *tons over a non-transit-oriented development pattern.*
- *Transportation Demand Management. The City of Alameda can require that major new developments mitigate their transportation impacts by providing annual operating, capital, and maintenance funds to support additional buses, shuttles, and/or water shuttles to support transportation system management (TSM) projects. A reliable transit system largely relies on an efficient street system. For example, the City required the recently approved Alameda Landing Project to provide funds for transit services from the site to Oakland Bay Area Rapid Transit (BART) stations and Jack London Square. The funds would be used to hire a transportation system/transportation demand management manager and may also be used to fund shuttles and water taxis. Described as an "eco-pass" program, each homeowner and business in the project could help fund the program and in return would receive an eco-pass that would allow those people to ride the transit at no additional cost. The eco-pass program is designed to attract future residents and business to Alameda because they want to use transit services instead of their cars.*
- *City of Alameda Bike Plan. Alameda's level geography, mild climate, and tree-lined streets make Alameda an excellent community for people who choose to walk or bicycle instead of using their cars for their trips to work, shopping, and/or recreation. Ordinance amendments that facilitate bicycle parking and shower facilities in commercial developments and along*

the main streets would encourage people to use this form of transportation. To make bicycling an attractive commute mode of transportation, it is important to provide facilities that would allow an employee to shower and change into their work clothes after bicycling to work in the morning. The City's zoning ordinance could be amended to require that major new buildings include secured bike lockers and shower facilities for employees. Appendix D.2 (correspondence from BikeAlameda) contains other suggested improvements including expansion of the interconnected bike route system.

- *Revise parking standards. If parking areas are appropriately sized and fully utilized, then other alternatives may become more attractive. However, this measure must be carefully considered, as a lack of parking could increase cruising for parking spaces, which in turn increases greenhouse gas emissions. The Development Services Department is currently leading a study of parking supply and requirements in the Webster Street and Park Street commercial districts that also looks at providing alternative transportation strategies. Those studies will provide the basis for decisions by the Planning Board and City Council regarding any change to the commercial parking requirements.*
- *Revise street design standards and reengineering existing streets (if economically feasible) to promote pedestrian and bicycle use and encourage the use of alternative modes of transportation. The design of streets can play an important role in making bicycling, walking, and transit a more attractive alternative to the automobile. The City of Alameda's General Plan already recognizes the importance of street design and includes General Plan Policy 4.3.d, which states: " Develop transit-oriented streets where feasible." This initiative would include a comprehensive review of the City's current street standards to ensure that these standards facilitate alternative modes of transportation.*

Initiative 2:	Provide transit and shuttles with signal priority lanes and queue jumpers to make transit a more attractive alternative to the automobile.

General Plan Policy 4.3.d states: "Develop transit-oriented streets where feasible." As the region, Oakland, and Alameda continue to grow, congestion at the estuary crossings, at the on and off-ramps to I-880, and on the other interstates will increase. As congestion increases, travel times will increase. To make transit a more attractive alternative, the City of Alameda should coordinate with the City of Oakland to provide signal priority lanes and "queue jumpers" that will allow buses and shuttles to bypass congestion and shorten the travel time for those choosing to use buses instead of their automobiles. The City of Alameda has designed a "queue jump" lane in the plans for the new Willie Stargell intersection with Webster Street, allowing buses to jump to the front of the line when entering the Posey Tubes. The City should continue its work with the City of Oakland to identify signal priority and queue jump locations between the tubes and the Lake Merritt and 12th Street BART stations.

The City of Alameda, BART, AC Transit, and the City of Oakland are currently developing a scope of work to focus on opportunities to improve transit connections between the Fruitvale BART Station and Alameda. The Fruitvale Rail Bridge and former Alameda Beltline right of way provide an excellent and unique opportunity to create a dedicated transit lane from Alameda Point all the way

across Alameda to the Fruitvale Bridge, across the bridge, and to within a few blocks of the Fruitvale BART Station.

Initiative 3:	Develop and fund alternative transportation strategies in the City's budget.

This initiative would be augmented by the following measures:

- *Create an alternative transportation funding priority list for the City's Capital Improvement Program. The list should include project costs and funding sources. The City of Alameda should establish an alternative transportation Capital Improvement Project list and fee that would establish and fund public transportation priorities. The Transportation Commission has developed a draft Transportation Element update for the City's General Plan, which will provide a policy basis for creating an alternative transportation-funding plan. The plan should identify project costs to implement top ten priorities.*
- *Implement a new transportation mitigation fee to fund alternative transportation priorities. In 2001, the Traffic Capacity Management Program (TCMP) instituted mitigation measures to manage the remaining capacity in the Webster and Posey Tubes by reducing standard peak hour trips based on land use. The program proposes TDM/TSM measures but includes no funding. Mitigations fees would not only assist the City's implementation of the TCMP, but could further other alternative transportation priorities.*
- *Charge staff to engage actively with federal, state and regional organizations to secure capital and operating funding for sustainable transportation. Reducing the cost of transit passes will make transit a more attractive alternative to the automobile. Additional public subsidies from regional transit agencies (MTC, AC Transit, BART, and others) and the State of California will be required to cover the costs of providing transit services. Currently, fares do not cover the costs of providing transit services, and the transit agencies depend upon public subsidies to pay for the costs of providing the services. Fares from the Alameda Harbor Bay Ferry service, for example, cover about 45% of the costs. Therefore, the public must lobby the State of California to shift its transportation funding priorities to funding transit services, or the public must be willing to pass bonds or increase taxes to pay for increased public transportation subsidies.*

Initiative 4:	Continue to convert the City's fleet to alternative fuel vehicles, such as biodiesel, electric, and other alternative fuels.

The City of Alameda recently purchased six electric vehicles to replace existing City fleet vehicles and is beginning a pilot program to enable three maintenance trucks to use B-20 biodiesel. Currently, 50% of Alameda County Industries' collection fleet runs on compressed natural gas (CNG) fuel. Waste Management and Alameda County Industries use clean-fuel vehicles that have lower greenhouse gas emissions than standards hauling vehicles to transport waste material from the Davis Street transfer facility to the Altamont Pass.

Initiative 5:	Encourage Alameda employers to provide opportunities for "flex hours," compressed workweek and telecommuting schedules to reduce vehicle miles traveled, and reintroduce transportation reduction programs.

As a standard condition on new business developments west of Grand Street, the City should encourage the provision of flextime, compressed workweeks, and telecommuting options to reduce commute traffic and greenhouse gas emissions from employee commutes.

The Bay Area Air Quality Management District recommends flexible work schedules and comp ressed workweeks as effective ways to reduce greenhouse gases. The City of Alameda provides a flexible 36-hour workweek compressed into four days for many of its employees. The four-day workweek can result in a 20% reduction in weekday automobile emissions for each employee who takes advantage of the flexible work schedule. The City's former Pacer program, which is no longer eligible for Measure B funds, provided financial incentives for using carpooling and alternative transportation. Reinstitution of a similar program would enhance the City's commitment to reducing the number of vehicle miles traveled, as would the "eco-pass" program that is designated to begin in 2008, which will provide City employees with AC transit passes.

Initiative 6:	Expand the geographic area of the Work/Live ordinance to provide greater opportunities for reduced work-related commutes.

Allowing people to live where they work reduces the need for commute trips. General Plan policy 5.5e states: "Minimize commuting by providing sufficient jobs and nearby housing opportunities." General Plan Housing Element Policy 2.a.vii states: " Encourage work/live opportunities as a way to reduce traffic impacts of housing, to provide affordable housing opportunities, and to stimulate business incubators."

The City's current work/live ordinance only allows work/live studios in existing buildings in specific zoning districts between Sherman Street, the Estuary, Tilden Way and Buena Vista Avenue. The ordinance should be expanded to include other areas of the city, such as Alameda Point, and should be amended to allow for the construction of new work/live buildings.

Initiative 7:	Encourage alternative fuel "Car Share" programs.

Car sharing programs provide opportunities for residents to reduce the number of cars that they maintain. By making cars available for emergency or occasional use, residents may be more likely to depend on transit as a regular form of transportation. For people who work in Alameda, transit becomes a more attractive alternative, because the e mployee has guaranteed access to a vehicle in the event of an emergency or unexpected family or personal matter, even if they used transit that day. This measure would reduce greenhouse gas emissions, because overall, more people would be driving fewer cars.

The City of Berkeley established a car share program, which provides hybrid or alternative fuel vehicles during the week for City employees on City business. The vehicles are available to Berkeley residents after business hours during the evening and weekends. The program reduces maintenance

costs for the City, maintains their fleet capacity and provides car share opportunities for residents. Appendix C provides additional information on this initiative.

Initiative 8:	Develop park-and-ride lots and expand ridesharing opportunities in large-scale developments at major transportation access nodes.

Strategically located park-and-ride lots adjacent to major transit corridors provide opportunities for Alameda residents who do not live within walking distance of a transit route to drive their cars to a dedicated parking area and either use transit for the remainder of the trip, or carpool.

The City of Alameda recently required that the Alameda Landing development provide a park-and-ride lot as part of that project, and the City has been studying the feasibility of creating a park-and-ride lot at the entrance to the Posey Tube at the intersection of Mariner Square Drive and Constitution Drive.

Energy Initiatives

The 2005 baseline inventory reveals that the second largest contributor to Alameda's greenhouse gas emissions (47%) comes from heating, cooling, and lighting commercial and residential buildings in Alameda. The use of natural gas accounts for 74% of the energy related emissions. Electricity use accounts for 26% of energy related emissions. To address these significant sources of greenhouse emissions, the Action Plan objective is three-fold:

1. Encourage the increased use of renewable energy resources,
2. Reduce energy consumption from existing residential, commercial, industrial, and institutional buildings and uses; and
3. Ensure that all new residential, commercial, industrial, and institutional buildings are designed and constructed to minimize energy consumption and greenhouse gas emissions.

Initiative 1:	Encourage the Alameda Public Utilities Board to require that Alameda Power & Telecom maintain and expand its source mix to 100 % carbon-free energy

Currently AP&T obtains 85% of its energy from renewable sources, such as geothermal, landfill gas, wind and hydroelectric. This excellent mix of renewable energy sources contributes to Alameda's relatively small per capita contribution to greenhouse gas emissions relative to other cities and counties. This initiative is intended to establish a goal for AP&T to maintain and expand the existing renewable energy source portfolio and become the first in the state to become completely renewable.

AP&T and the Public Utilities Board have updated the Greenhouse Gas Reduction Action Plan (Appendix E), which focuses on completing all cost effective, effective, feasible and reliable energy efficiency measures by 2016. The plan also includes programs to reduce vehicle emissions through encouraging plug-in hybrid electric vehicle technology, and supports other measures such as conversion of some natural gas uses to solar (e.g. water heating) or high-efficiency electricity use.

Initiative 2:	Require that all recommended City Council actions include an analysis or evaluation of whether the action supports or is consistent with Alameda's Local Action Plan Initiatives and furthers progress toward the Greenhouse Gases Reduction Target

This initiative ensures that the City of Alameda does not inadvertently take actions or implement policies that may be counter productive to reducing greenhouse gases. The intent of this policy is to ensure that the greenhouse gas effects of all City actions are considered.

Initiative 3:	Provide technical assistance for energy efficiency and track progress through recognition programs. If feasible, develop financial incentives to educate and encourage Alameda residents and businesses to be energy efficient.

This program would include informational handouts, technical assistance, and financial incentives to supplement AP&T and PG&E rebate and educational programs to encourage Alameda residents and businesses to upgrade their facilities with systems to reduce their energy consumption. A recognition and rewards program could encourage Alameda businesses and households to make important changes in their daily activities. Stopwaste.org has a similar program called the "Green Business Program" that recognizes businesses that are environmentally sensitive and good stewards of the environment. Locally, the Alameda County Environmental Services Department implements this program.

Initiative 4:	Amend the Alameda Municipal Code to include sustainable design and green building standards for all new, substantially expanded, and remodeled buildings

A series of sustainable design and green building Municipal Code amendments should be adopted to ensure that new construction in Alameda is designed and constructed in a manner that minimizes energy use and greenhouse gas emissions. These amendments could be developed and adopted as a comprehensive package or in a series o f individual amendments. Specific amendments that should be considered in the near term include using Leadership in Energy Efficiency and Environmental Design (LEED) standards and/or Green Build's point rating system. For example, the City's new Alameda Free Library was constructed to achieve a Gold LEED Standard and Peet's Coffee and Tea recently designed and constructed its new Alameda facility in the Harbor Bay Business Park to achieve a Silver LEED Standard. Clif Bar and Company is currently designing its new headquarters building at Alameda Landing to meet a Platinum LEED standard.

Initiative 5:	Develop a program to reduce the use of 2-cycle combustion engines, including the enforcement of existing ordinances. Encourage the establishment of trade-in programs.

2-cycle combustion engines are commonly found in lawnmowers, leaf blowers, and other tools. The reduction of the numbers of combustion engines used in Alameda may have a negligible impact on the overall greenhouse gas emissions. However, if 2-cycle combustion engines were replaced with alternative fuel or electrical motors, Alameda may achieve an overall reduction in emissions.

Initiative 6:	Develop a wood-burning prohibition ordinance to reduce air pollution for new residential construction

Wood-burning prohibition ordinances may also have a negligible impact on reducing greenhouse gas emissions. However, a prohibition on the installation of new fireplaces for future development would help prevent additional emissions.

Waste and Recycling Initiatives

According to the 2005 Baseline Inventory, Alameda's residents and businesses sent approximately 59,024 tons of waste to the landfill in 2005. That is the equivalent of 1,628 pounds of waste for every man, woman, and child in Alameda. As waste in landfills decomposes, it generates methane gas, which is 21 times more potent as a greenhouse gas than CO_2. The Action Plan's waste and recycling initiatives are designed to reduce the waste- and recycling-based greenhouse gas emissions by maximizing recycling, reuse, and composting.

Initiative 1:	Adopt "Zero Waste Strategy" Programs and Ordinances.

A successful Zero-Waste Strategy combines a number of programs and requirements to mandate and encourage Alameda households and businesses to reduce consumption and increase reuse and recycling. A zero waste strategy could include the following programs and requirements.

- *A ban on polystyrene foam to-go containers (i.e. Styrofoam). Polystyrene foam is not biodegradable, must be placed in landfills, and has an estimated life span of 400 years*
- *A stronger environmental purchasing policy. The City has a policy to encourage City departments to purchase recycled content office supplies. The existing policy could be strengthened to further reduce waste generation by the City of Alameda's operations. See Appendix F for further reference on environmental purchasing.*
- *A stronger Construction and Demolition ordinance. The City's existing Construction and Demolition ordinance could be strengthened to better enforce and monitor on-site waste sorting and recycling, and more aggressive recycling targets.*
- *Work with the Alameda Unified School District to fully implement recycling, reuse and composting at schools. Work with Stopwaste.org to provide on-going recycling education at schools. With 18 schools and approximately 10,000 students, the schools represent an excellent opportunity to raise awareness among the next generation for recycling, reusing, reducing waste and composting to significantly reduce greenhouse gas emissions.*
- *Work with the State Department of Conservation to develop more centrally located California Redemption Value recycling drop-off areas for bottles and glass. Implement required zoning changes to allow recycling centers that recover other recyclable materials to locate in Alameda.*

Initiative 2:	Encourage the development of the biodiesel industry in Alameda, including local collection of used animal fats and vegetable oils for rendering into biodiesel. In addition, the City should develop policies that encourage the location of biodiesel and compressed natural gas (CNG) facilities in Alameda through implementation of required Municipal Code revisions.

A bio fuel generation facility on the island could utilize waste oils from local restaurants and Alameda households to create biodiesel for use by municipal services, local residents, businesses, the boating industry, and heating. Requiring new service stations to include a biodiesel pump would provide a convenient and cost-effective local alternative. Appendix D.3 provides additional information on ways biodiesel could be implemented.

Outreach and Education Initiatives

To achieve the Action Plan's greenhouse gas emission reduction goals will require the active participation and cooperation of all of Alameda's residents and businesses. The Outreach and Education Initiatives are designed to increase awareness and participation by every Alameda household and business in the effort to combat global warming.

Initiative 1:	Develop a multi-faceted community outreach program to increase public awareness and participation in greenhouse gas reductions.

Community outreach is an important component to a successful outcome. In order to be effective, the community outreach program should include an array of programs, information, and resources that are available from different organizations, media sources, and in multiple languages. A proposed draft program is included in Appendix D.4. The program could include:

- *A citywide education forum sponsored by the City in which the community can engage in a meaningful discussion about climate change.*
- *Public information about global warming and City local actions and programs available to reduce greenhouse gases provided on the City of Alameda website, at City facilities such as the Permit Center, and AP & T, and at other public venues.*
- *A brochure or press kit that showcases the City of Alameda's sustainability efforts and greenhouse gas reduction goals.*
- *A review of all environmental programs and materials to ensure equitable distribution of resources, technical assistance and financial support to all residents of Alameda (i.e. resources available in multiple languages, easily accessible for seniors)*
- *An "Adopt a tree" program in which people can donate money for the City to plant a tree.*
- *Advertise City energy and recycling audits, efforts and programs for sustainability.*
- *An emission off-set program and junk mail reduction partnership to reduce waste streams and potentially generate revenue for the City to be used for other outreach activities (Appendix D.4)*

V. Implementation and Monitoring

This Local Action Plan is intended to serve as a guide to help the City of Alameda and the larger community in pursuing work plans with the objectives of conserving resources and further abating global warming.

Chapter IV describes the actions that will be necessary to meet the City of Alameda's greenhouse gas reduction goal of 25%, or approximately 77,579 tons of eCO_2 by the year 2020. Implementing the Local Action Plan for Climate Protection will, therefore, require increased and well-coordinated efforts in all of these areas. If the City of Alameda is to reach its reduction target by the year 2020, it is imperative that over the next one to three years, the City and community at large:

- Dedicate time to managing and guiding implementation of the initiatives.
- Accelerate and expand existing programs in all areas – land use and transportation, energy efficiency, renewable energy, and solid waste and recycling.
- Develop the infrastructure to support new programs.
- Secure resources to implement actions.
- Set up and maintain tracking mechanisms and indicators to measure progress.

The GHG Emissions Analysis Summary Table, which follows this Chapter, is organized by initiative area and estimates the amount of potential eCO_2 reductions that might be generated by each initiative. Not all initiatives provide quantifiable reductions, but nevertheless may be important to the success of the City in meeting its reduction goal. The table also describes the resources needed to accomplish the initiative and the potential funding sources.

The City should have dedicated staff to support City departments and private entities to integrate climate protection into their standard operating procedures. To be successful, staff should create a process that includes participation of stakeholder groups and implementing departments. The community itself needs to become involved. Greenhouse gas emission reduction starts at home with recycling, appropriate landscaping, home improvements that increase energy efficiency and a reduction in trips that involve the use of the automobile. Involvement includes education and support by the local school district and private schools. Local businesses and institutions need to also become leaders in creative ways to reduce their carbon footprints.

The City's biannual budget, particularly the Capital Improvement Program, may serve as the funding resource for successful implementation of many of the Local Action Plan initiatives. On a biannual basis, staff should report on the progress of implementing the initiatives and reevaluate and recommend to the City Council action priorities, target levels, and future monitoring of emission reduction programs. The first review is anticipated in 2010.

Appendix A

City Council and Task Force Resolutions Supporting Climate Protection

CITY OF ALAMEDA RESOLUTION NO. 14001

PARTICIPATING IN THE INTERNATIONAL COUNCIL FOR LOCAL ENVIRONMENTAL INITIATIVES (ICLEI) CITIES FOR CLIMATE PROTECTION CAMPAIGN AND CREATION OF A CITY TASK FORCE

Approved as to Form
City Attorney

WHEREAS, scientific consensus has developed that Carbon Dioxide (CO2) and other greenhouse gases released into the atmosphere have a profound effect on the Earth's climate; and

WHEREAS, in 2003 the American Geophysical Union adopted a statement noting that human activities are increasingly altering the Earth's climate and that natural influences cannot explain the rapid increase in near-surface temperatures observed during the second half of the 20th century; and

WHEREAS, in 2001, at the request of the Administration, the National Academy of Sciences reviewed and declared global warming a real problem caused in part by the actions of humankind; and

WHEREAS, the 2001 Third Assessment Report from the Intergovernmental Panel on Climate Change and the 2000 U.S. Global Change Research Program's First National Assessment indicate that global warming has begun; and

WHEREAS, 162 countries including the U.S. pledged under the United Nations Framework Convention on Climate Change to reduce its greenhouse gas emissions; and

WHEREAS, energy consumption, specifically the burning of fossil fuels, accounts for more than 80% of U.S. greenhouse gas emissions; and

WHEREAS, local governments influence communities' emissions by exercising key powers over land use, transportation, construction, waste management, and energy management; and

WHEREAS, local government actions taken to reduce greenhouse gas emissions and increase energy efficiency provide multiple local benefits by decreasing air pollution, creating jobs, reducing energy expenditures, and saving money for the local government, its businesses and its residents; and

WHEREAS, StopWaste.org is allowing Alameda County jurisdictions to use $10,000.000 of funding from their Waste Mitigation Fund to pay for the development of greenhouse gas emissions inventories and Local Climate Action plans as part of the Alameda County Climate Protection Project; and

WHEREAS, the Cities for Climate Protection Campaign sponsored by ICLEI-Local Governments for Sustainability, has invited the City of Alameda to become a member of ICLEI and a partner in the Campaign; and

WHEREAS, the City commits to creating a City task force to assist in the creation of Alameda's Local Climate Action plan.

NOW THEREFORE, BE IT RESOLVED that the City Council of the City of Alameda commits to ICLEI membership and participation in the Cities for Climate Protection Campaign and, as a participant, pledges to take a leadership role in promoting public awareness about the causes and impacts of climate change; and

BE IT FURTHER RESOLVED that the City Council of the City of Alameda creates a City Task Force consisting of one member each of the Planning Board, Economic Development Commission, Transportation Commission, Public Utilities Board and Alameda County Industries and four public members at large to: 1) publicize and engage the community at large, 2) evaluate and provide prioritized recommendations to Council on actions that can be taken on the output of the assessment, 3) provide recommendations for monitoring of activities, and 4) provide recommendations on how to proceed, including but not limited to, establishing a standing commission; and

BE IT FURTHER RESOLVED that the City Council of the City of Alameda will undertake the Cities for Climate Protection Campaign's 5-Milestones to reduce both greenhouse gas and air pollution emissions throughout the community; and

BE IT FINALLY RESOLVED that the City Council of the City of Alameda requests assistance from ICLEI's Cities for Climate Protection Campaign as it progresses through the 5-Milestone methodology.

* * * * * *

I, the undersigned, hereby certify that the foregoing Resolution was duly and regularly adopted and passed by the Council of the City of Alameda in the Regular Meeting of the City Council on the 18th day of July 2006, by the following vote to wit:

AYES:	Councilmembers Daysog, deHaan, Gilmore, Matarrese and Mayor Johnson - 5.
NOES:	None.
ABSENT:	None.
ABSTENTIONS:	None.

IN WITNESS, WHEREOF, I have hereunto set my hand and affixed the official seal of said City this 19th day of July, 2006.

Lara Weisiger, City Clerk
City of Alameda

CITY OF ALAMEDA RESOLUTION NO. 14018

ENDORSING AND SUPPORTING THE U.S. CONFERENCE OF MAYORS' CLIMATE PROTECTION AGREEMENT

Approved as to Form
City Attorney

WHEREAS, scientific consensus has developed that Carbon Dioxide (CO2) and other greenhouse gases released into the atmosphere have a profound effect on the Earth's climate; and

WHEREAS, in 2001, at the request of the Administration, the National Academy of Sciences reviewed and declared global warming a real problem caused in part by the actions of humankind; and

WHEREAS, the 2001 Third Assessment Report from the Intergovernmental Panel on Climate Change and the 2000 U.S. Global Change Research Program's First National Assessment indicate that global warming has begun; and

WHEREAS, 162 countries including the U.S. pledged under the United Nations Framework Convention on Climate Change to reduce its greenhouse gas emissions; and

WHEREAS, in 2003 the American Geophysical Union adopted a statement noting that human activities are increasingly altering the Earth's climate and that natural influences cannot explain the rapid increase in near-surface temperatures observed during the second half of the 20th century; and

WHEREAS on February 16, 2005 the Kyoto Protocol took effect in the 141 countries that ratified it; and

WHEREAS, on June 13, 2005 the Mayors' Climate Protection Agreement was passed unanimously by the U.S. Conference of Mayors; and

WHEREAS, as of July 14, 2006, Mayors representing over 47 million Americans have supported the Agreement; and

WHEREAS, local governments influence communities' emissions by exercising key powers over land use, transportation, construction, waste management, and energy management; and

WHEREAS, local government actions taken to reduce greenhouse gas emissions and increase energy efficiency provide multiple local benefits by decreasing air pollution, creating jobs, reducing energy expenditures, and saving money for the local government, its businesses and its residents; and

WHEREAS, on July 18, 2006, the City Council of the City of Alameda adopted a Resolution to become a member of the International Council for Local Environmental Initiatives (ICLEI) and agreed to participate in the Cities for Climate Protection Campaign and, as a participant, pledged to take a leadership role in promoting public awareness about the causes and impacts of climate change; and

WHEREAS, the City Council's actions regarding ICLEI support and further the Mayors' Climate Protection Agreement.

NOW THEREFORE, BE IT RESOLVED that the City Council of the City of Alameda pledges to take a leadership role in promoting public awareness about the causes and impacts of climate change and endorses and supports the U.S. Conference of Mayors' Climate Protection Agreement.

* * * * * *

I, the undersigned, hereby certify that the foregoing Resolution was duly and regularly adopted and passed by the Council of the City of Alameda in the Regular Meeting of the City Council on the 19th day of September 2006, by the following vote to wit:

AYES:	Councilmembers Daysog, deHaan, Gilmore, Matarrese and Mayor Johnson - 5.
NOES:	None.
ABSENT:	None.
ABSTENTIONS:	None.

IN WITNESS, WHEREOF, I have hereunto set my hand and affixed the official seal of said City this 20th day of September, 2006.

Lara Weisiger, City Clerk
City of Alameda

CITY OF ALAMEDA
CLIMATE PROTECTION TASK FORCE
RESOLUTION NO. 08-01

RECOMMENDATION TO THE CITY COUNCIL TO ADOPT A GREENHOUSE GAS REDUCTION GOAL OF AT LEAST 25% AND ADOPT THE LOCAL ACTION PLAN FOR CLIMATE PROTECTION

WHEREAS, scientific consensus has developed that Carbon Dioxide (CO2) and other greenhouse gases released into the atmosphere have a profound effect on the Earth's climate; and

WHEREAS, the 2001 Third Assessment Report from the Intergovernmental Panel on Climate Change and the 2000 U.S. Global Change Research Program's First National Assessment indicate that global warming has begun; and

WHEREAS, energy consumption, specifically the burning of fossil fuels, accounts for more than 80% of U.S. greenhouse gas emissions; and

WHEREAS, local governments influence communities' emissions by exercising key powers over land use, transportation, construction, waste management, and energy management; and

WHEREAS, in 2007 the Intergovernmental Panel on Climate Change stated that coastal communities and habitats will be increasingly stressed by climate change impacts interacting with development and pollution; and

WHEREAS, local government actions taken to reduce greenhouse gas emissions and increase energy efficiency provide multiple local benefits by decreasing air pollution, creating jobs, reducing energy expenditures, and saving money for the local government, its businesses and its residents; and

WHEREAS, in November 2006 the City Council pledged to participate in the International Council on Local Environmental Initiatives (ICLEI) Cities for Climate Protection Campaign's 5-Milestone Process to reduce both greenhouse gas and air pollution emissions throughout the community; and

WHEREAS, in November 2006 the City created the Climate Protection Task Force to develop a Local Action Plan and greenhouse gas emission reduction goal; and

WHEREAS, in January 2007, the City conducted a Baseline Inventory based on 2005 data that summarized Alameda's greenhouse gas emissions; and

WHEREAS, the baseline shows that the City has significant programs already in place to reduce greenhouse gases, and that Alameda Power and Telecom provide power that is already 85 % carbon-free, and that and that the City of Alameda has the lowest per capita rate of greenhouse gas emissions in Alameda County, and that the City of Alameda has the second lowest greenhouse gas emissions per residential household in Alameda County; and

WHEREAS, other cities in the nation that have pledged to reduce greenhouse gas emissions generally recommend a reduction goal of 20-25% over their baseline emissions inventories; and

WHEREAS, in September 2006, Assembly Bill 32 was passed requiring greenhouse gas emissions be reduced to 1990 levels by 2020 in the State of California, which is a 25% reduction; and

WHEREAS, the Climate Protection Task Force has developed initiatives and measures that, if fully implemented, could reduce local greenhouse gas emissions at least 25% from the 2005 Baseline Inventory, which will require a significant effort by the City of Alameda and the local community to reach these goals as the City of Alameda already has significant greenhouse gas emissions reduction measures in place; and

WHEREAS, the Climate Protection Task Force has formulated a Local Action Plan for Climate Protection; and

THEREFORE, BE IT RESOLVED, that the Climate Protection Task Force recommends that the City Council adopt a greenhouse gas emissions reduction goal of at least 25% pursuant to the pledge made by the City to participate in the International Council on Local Environmental Initiatives (ICLEI) Cities for Climate Protection Campaign's 5-Milestone Process; and

BE IT FURTHER RESOLVED, that the Climate Protection Task Force recommends that the City Council adopt the Local Action Plan as amended at the meeting of January 7, 2008.

PASSED AND ADOPTED by the Climate Protection Task Force on the 7th day of January 2008 by the following vote:

AYES: (7) Mc Cormick, Autorino, Schiffman, Burton, Cunningham, Silberstein, and Weiss

NOES: (0)

ABSENT: (2) Krueger, Pellegrini

ABSTAIN:(0)

ATTEST:

Cynthia Eliason, Secretary

CITY OF ALAMEDA
CLIMATE PROTECTION TASK FROCE
RESOLUTION NO. 08-02

RECOMMENDATION TO CITY COUNCIL THE CREATION OF A SUSTAINABILITY COMMISSION FOR IMPLEMENTATION AND MONITORING OF THE LOCAL ACTION PLAN

WHEREAS, in November 2006 the City designated the creation of the Climate Protection Task Force consisting of one member each of the Planning Board, Economic Development Commission, Transportation Commission, Public Utilities Board and Alameda County Industries and four public members to: 1) publicize and engage the community at large, 2) evaluate and provide prioritized recommendations to Council on actions that can be taken on the output of the assessment, 3) provide recommendations for monitoring of activities, and 4) provide recommendations on how to proceed, including but not limited to, establishing a standing commission; and

WHEREAS, throughout 2007 the Task Force held public meetings to develop initiatives and measures that can be implemented to reduce greenhouse gas emissions; and

WHEREAS, the Task Force has evaluated and provided prioritized recommendations to City Council in the form of a Local Action Plan and greenhouse gas emissions reduction goal of 25%; and

WHEREAS, the Climate Protection Task Force believes the City would be best served by oversight of a Sustainability Commission to monitor the implementation of the recommendations of the Local Action Plan.

THEREFORE, BE IT RESOLVED, that the Climate Protection Task Force recommends that the City Council establish a Sustainability Commission of at least five members to monitor the implementation and progress of the Local Action Plan on a quarterly basis, publicize and engage the community at large on issues of sustainability, review the quarterly reports prepared by staff, host biannual public forums to discuss and evaluate the implementations of the Local Action Plan, advise Boards and Commissions on implementation and make recommendations to the City Council regarding revisions to the Local Action Plan or the citywide greenhouse gas reduction goal.

PASSED AND ADOPTED by the Climate Protection Task Force on the 7th day of January 2008 by the following vote:

AYES: (7) Silberstein, Weiss, Schiffman, Autorino, Burton, Cunningham, and Mc Cormick,

NOES: (0)

ABSENT: (2) Krueger, Pellegrini

ABSTAIN:(0)

ATTEST:

Cynthia Eliason, Secretary

CITY OF ALAMEDA RESOLUTION NO. 14183

SETTING A GREENHOUSE GAS REDUCTION GOAL OF 25% BELOW THE 2005 BASELINE LEVEL, ADOPTING THE LOCAL ACTION PLAN FOR CLIMATE PROTECTION, AND DISSOLVING THE CLIMATE PROTECTION TASK FORCE

Approved as to Form
City Attorney

WHEREAS, scientific consensus has developed that carbon dioxide (CO2) and other greenhouse gases released into the atmosphere have a profound effect on the Earth's climate; and

WHEREAS, the 2001 Third Assessment Report from the Intergovernmental Panel on Climate Change and the 2000 U.S. Global Change Research Program's First National Assessment indicate that global warming has begun; and

WHEREAS, energy consumption, specifically the burning of fossil fuels, accounts for more than 80% of U.S. greenhouse gas emissions; and

WHEREAS, local governments influence communities' emissions by exercising key powers over land use, transportation, construction, waste management, and energy management; and

WHEREAS, in 2007 the Intergovernmental Panel on Climate Change stated that coastal communities and habitats will be increasingly stressed by climate change impacts interacting with development and pollution; and

WHEREAS, local government actions taken to reduce greenhouse gas emissions and increase energy efficiency provide multiple local benefits by decreasing air pollution, creating jobs, reducing energy expenditures, and saving money for the local government, its businesses and its residents; and

WHEREAS, in November 2006 the City Council pledged to participate in the International Council on Local Environmental Initiatives (ICLEI) Cities for Climate Protection Campaign's Five-Milestone Process to reduce both greenhouse gas and air pollution emissions throughout the community; and

WHEREAS, in November 2006 the City created the Climate Protection Task Force to develop a Local Action Plan and greenhouse gas emission reduction goal; and

WHEREAS, in January 2007, the City conducted a baseline inventory based on 2005 data that summarized Alameda's greenhouse gas emissions; and

WHEREAS, the baseline shows that the City has significant programs already in place to reduce greenhouse gases, and that Alameda Power and Telecom provides power that is already 85% carbon-free, and that the City of Alameda has the lowest per capita rate of greenhouse gas emissions in Alameda County and has the second lowest greenhouse gas emissions per residential household in Alameda County; and

WHEREAS, the Climate Protection Task Force has developed initiatives and measures within the draft Local Action Plan that, if fully implemented, could reduce local greenhouse gas emissions by approximately 25% from the 2005 baseline inventory; and

WHEREAS, at the meeting of January 7, 2008, the Climate Protection Task Force recommended a greenhouse gas emissions reduction goal of at least 25% and adoption of the Local Action Plan for Climate Protection, as amended, and

WHEREAS, the Climate Protection Task Force has met its obligations pursuant to Resolution No. 14001.

THEREFORE, BE IT RESOLVED that the City Council of the City of Alameda determines that the project is Categorically Exempt from CEQA, Guidelines, Section 15308 – Actions by Regulatory Agencies for Protection of the Environment.

BE IT FURTHER RESOLVED that the City Council adopts a greenhouse gas emissions reduction goal of 25%.

BE IT FURTHER RESOLVED that the City Council adopts the Local Action Plan for Climate Protection.

BE IT FINALLY RESOLVED that the City Council dissolves the Climate Protection Task Force.

* * * * * *

I, the undersigned, hereby certify that the foregoing Resolution was duly and regularly adopted and passed by the Council of the City of Alameda during the Regular Meeting of the City Council on the 5th day of February, 2008, by the following vote to wit:

AYES:	Councilmembers deHaan, Gilmore, Matarrese, Tam and Mayor Johnson - 5.
NOES:	None.
ABSENT:	None.
ABSTENTIONS:	None.

IN WITNESS, WHEREOF, I have hereunto set my hand and affixed the official seal of said City this 6th day of February, 2008.

Lara Weisiger, City Clerk
City of Alameda

Appendix B
Baseline Greenhouse Gas Emissions Inventory Report

City of Alameda

Baseline Greenhouse Gas Emissions Inventory Report

January 2007

Conducted by ICLEI's Cities for Climate Protection® Campaign
in partnership with the City of Alameda

City of Alameda Baseline Greenhouse Gas Emissions Inventory

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IV. Conclusion

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Acknowledgements

This Greenhouse Gas Emissions Inventory Report was completed through the generous support of many individuals and organizations. The staff at the City of Alameda has been most helpful in gathering the data and doing the subsequent analysis. Particular thanks go to Cynthia Eliason, Supervising Planner at the City of Alameda, and Meredith Owens, Energy Management Supervisor for Alameda Power & Telecom.

Many thanks are also due to StopWaste.Org. Their generous support of ICLEI and the jurisdictions in Alameda County was instrumental to this project's success.

I. Introduction

Since the early 1990's scientific consensus holds that the world's population is releasing greenhouse gases faster than the earth's natural systems can absorb them. These gases are released as by-products of fossil fuel combustion, waste disposal, energy use, land-use changes, and other human activities. This release of gases, such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), creates a blanket around the earth that allows light to pass through but traps heat at the surface preventing its escape into space. Known as the greenhouse effect or global climate change, models show that this phenomenon will lead to a 2^oF to 10^oF temperature increase over the next 100 years. Already the Intergovernmental Panel on Climate Change warns that most of the warming observed over the last 50 years is attributable to human activities.

Changes in the earth's temperature will have impacts for residents of Alameda County, California. These impacts could include:

- Warmer weather associated with increased heat waves
- Wetter weather with an increase in annual rainfall of 20 percent to 30 percent leading to more serious storm events
- Rising sea levels that will threaten coastal infrastructure, ecosystems, and water supplies
- Decrease in the Sierra snow pack that will effect fresh water availability and tourism opportunities
- Increase in insect born diseases

Although one city cannot independently resolve the issue of climate change, local governments can make a positive impact through cumulative local action. Cities and counties have the ability to reduce greenhouse gas emissions through effective land use and transportation planning, wise waste management, and the efficient use of energy.

A. Baseline Emissions Inventory Report: Purpose

This report presents the results of the City of Alameda's baseline greenhouse gas emissions inventory. The inventory was conducted by ICLEI – Local Governments for Sustainability in partnership with the City of Alameda. The purpose of the baseline emissions inventory is to determine the levels of greenhouse gas emissions that the City of Alameda emits in its base year, 2005, on a municipal level and a community-wide level. This information will be used to help the city adopt an emissions reduction target and develop an emissions reduction action plan. The inventory provides important information on the jurisdictions emissions profile so that subsequent emissions reduction strategies can be tailored to the community's specific situation.

B. The Alameda County Climate Protection Project

In June 2006 the City of Alameda, along with 10 other local governments in Alameda County, committed to becoming a member of ICLEI and participating in the Alameda County Climate Protection Project. The project was launched by ICLEI in partnership with StopWaste.Org and the Alameda County Conference of Mayors. In committing to the project, the City of Alameda embarked on an ongoing, coordinated effort to reduce the emissions that cause global warming, improve air quality, reduce waste, cut energy use and save money.

C. ICLEI and the Cities for Climate Protection Campaign

ICLEI's mission is to improve the global environment through local action. The Cities for Climate Protection® (CCP) Campaign is ICLEI's flagship campaign designed to educate and empower local governments worldwide to take action on climate change. ICLEI provides resources, tools, and technical assistance to help local governments measure and reduce greenhouse gas emissions in their communities and their internal municipal operations.

ICLEI's CCP Campaign was launched in 1993 when municipal leaders, invited by ICLEI, met at the United Nations in New York and adopted a declaration that called for the establishment of a worldwide movement of local governments to reduce greenhouse gas emissions, improve air quality, and enhance urban sustainability. The CCP Campaign achieves these results by linking climate change mitigation with actions that improve local air quality, reduce local government operating costs, and improve quality of life by addressing other local concerns. The CCP Campaign seeks to achieve significant reductions in U.S. greenhouse gas emissions by assisting local governments in taking action to reduce emissions and realize multiple benefits for their communities.

ICLEI uses the performance-oriented framework and methodology of the CCP Campaign's Five Milestones to assist U.S. local governments in developing and implementing harmonized local approaches for reducing global warming and air pollution emissions, with the additional benefit of improving community livability. The milestone process consists of:

- Milestone 1: Conduct a baseline emissions inventory and forecast
- Milestone 2: Adopt an emissions reduction target
- Milestone 3: Develop a Climate Action Plan for reducing emissions
- Milestone 4: Implement policies and measures
- Milestone 5: Monitor and verify results

In 2006 the City of Alameda adopted a resolution to take action for climate protection and officially joined ICLEI's Cities for Climate Protection Campaign.

II. Emissions Inventory

A. Reasoning, Methodology & Model

ICLEI's Cities for Climate Protection methodology enables local governments to systematically estimate and track greenhouse gas emissions from energy use and waste related activities at the community-wide scale and those resulting directly form municipal operations. The municipal operations inventory is a subset of the community-scale inventory.

Once completed, these inventories provide the basis for creating an emissions forecast and reduction target, and enable the quantification of emissions reductions associated with implemented and proposed measures.

1. Emissions Analysis Software

To facilitate local government efforts to identify and reduce greenhouse gas emissions, ICLEI developed the Clean Air and Climate Protection (CACP) Software package with Torrie Smith Associates. This software estimates emissions derived from energy consumption and waste generation within a community. The CACP software determines emissions using specific factors (or coefficients) according to the type of fuel used. Emissions are aggregated and reported in terms of equivalent carbon dioxide units, or eCO_2. Converting all emissions to equivalent carbon dioxide units allows for the consideration of different greenhouse gases in comparable terms. For example, methane is twenty-one times more powerful than carbon dioxide in its capacity to trap heat, so the model converts one ton of methane emissions to 21 tons of eCO_2.

The emissions coefficients and methodology employed by the software are consistent with national and international inventory standards established by the Intergovernmental Panel on Climate Change (1996 Revised IPCC Guidelines for the Preparation of National GHG Emissions Inventories), the U.S. Voluntary Greenhouse Gas Reporting Guidelines (EIA form1605), and, for emissions generated from solid waste, the U.S. EPA's Waste Reduction Model (WARM).

The CACP software has been and continues to be used by over 200 U.S. cities and counties to quantify the reduction in their greenhouse gas emissions. However, it is worth noting that, although the software provides cities/counties with a sophisticated and useful tool, calculating emissions from energy use with precision is difficult. The model depends upon numerous assumptions, and it is limited by the quantity and quality of available data. With this in mind, it is useful to think of any specific number generated by the model as an approximation, rather than an exact value.

2. Inventory Sources and Data Collection Process

An inventory of greenhouse gas emissions requires the collection of information from a variety of sectors and sources. For community electricity and natural gas data, ICLEI consulted Alameda Power & Telecom (AP&T) and Pacific Gas & Electric Company (PG&E), respectively. The Metropolitan Transportation Commission (MTC), Bay Area Air Quality Management District (BAAQMD), and Bay Area Rapid Transit (BART) served as sources of transportation data. Solid waste data was gathered from StopWaste.Org, Waste Management, Inc., Alameda County Industries, Republic Services, Inc. and the U.S. Environmental Protection Agency (U.S. EPA).

Cynthia Eliason, Supervising Planner at the City of Alameda, coordinated the City's municipal data collection process.

These data were entered into the software to create a community emissions inventory and a municipal emissions inventory. The community inventory represents all the energy used within the City of Alameda and its contribution to greenhouse gas emissions. The municipal inventory is a subset of the community inventory, and includes emissions derived from internal government operations.

There are two main reasons for completing separate emissions inventories for community and municipal operations. First, the government is committed to action on climate change, and has a higher degree of control to achieve reductions in its own municipal emissions than those created by the community at large. Second, by proactively reducing emissions generated by its own activities, the Alameda government takes a visible leadership role in the effort to address climate change. This is important for inspiring local action in Alameda as well as for inspiring other communities.

The City of Alameda's inventory is based on the year 2005. When calculating Alameda's emissions inventory, all energy consumed within the city limits was included. This means that, even though some of the energy consumed by Alameda's residents is produced elsewhere, the emissions associated with it appear in Alameda's inventory. The decision to calculate emissions in this manner reflects the general philosophy that a community should take full ownership of the impacts associated with its energy consumption, regardless of whether the generation occurs within the geographical limits of the community.

B. Inventory Results

The results below represent the City of Alameda's completion of the first milestone of ICLEI's CCP campaign.

1. Community Emissions Inventory

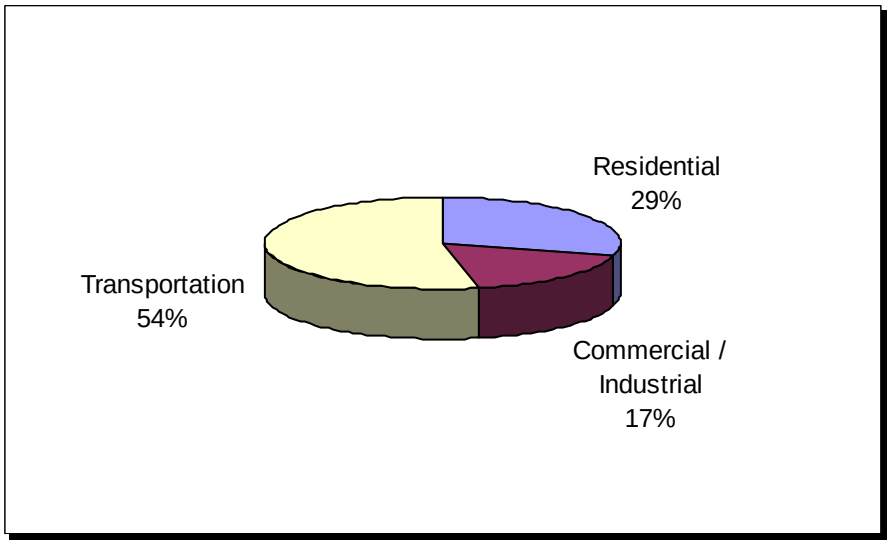
In the base year 2005, the City of Alameda emitted approximately 303,097 tons of eCO_2 from the residential, commercial/industrial, transportation and waste sectors. Burning fossil fuels in vehicles and for energy use in buildings and facilities is a major contributor to Alameda's greenhouse gas emissions. Fuel consumption in the transportation sector is the single biggest source of emissions, contributing 53.2 percent of total emissions. Table (1) and Figure (a) below show Alameda's total greenhouse gas emissions from all major sources for the year 2005. The residential and commercial/industrial sectors represent emissions that result from electricity and natural gas used in both private and public sector buildings and facilities. The transportation sector includes emissions from private, commercial and fleet vehicles driven within the City's geographical boundaries as well as the emissions from transit vehicles and the city-owned fleet.

Table (1): Alameda Community Emissions Summary

Potential Sources	Equiv eCO_2 (tons)	Energy (MMBtu)
Residential	89,084	1,688,689
Commercial/Industrial	52,617	1,251,778
Transportation	161,395	1,877,906
TOTAL	303,097	4,818,373

Source: CACP Model output

Figure (a): Alameda Community Greenhouse Gas Emissions - Year 2005



Source: CACP Model output

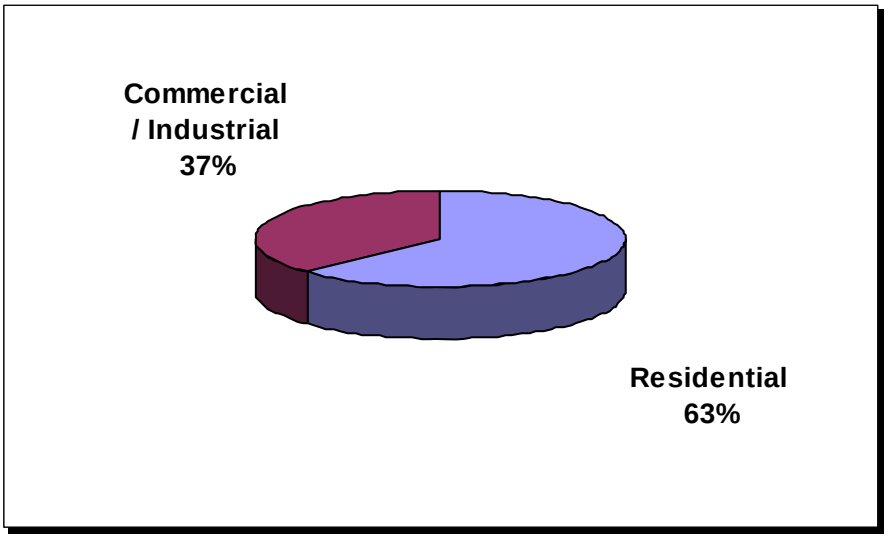
Energy / Stationary Source Emissions

In 2005, Alameda's total stationary energy consumption was about 361,496,800 kWh of electricity and 17,066,889 therms of natural gas. Stationary energy use by all sectors (residential, commercial and industrial activities) accounts for 46.8 percent of total greenhouse gas emissions in Alameda. These emissions are a result of the combustion of fossil fuel. Alameda's stationary energy use resulted in a total of approximately 141,701 tons of eCO_2 emissions in 2005.

The City of Alameda receives its electricity from Alameda Power & Telecom (AP&T). The 2005 emissions coefficients for electricity provided by AP&T are included in Note 1 in the Buildings and Streetlights sectors in Appendix A as well as Note 1 in the Residential/Commercial/Industrial sector in Appendix B. The types of power sources that make up a utility's electricity generation mix have a significant impact on a city's greenhouse gas emissions. A coal fired power plant, for example, releases 1.3 tons of eCO_2 per megawatt-hour of electricity generated versus 0.7 tons for gas turbines and 0 tons for renewable sources such as geothermal, solar, wind, or hydroelectric power. Since 1983, about 50 percent of AP&T's electricity generation mix has been from geothermal.

Figure (b) shows the breakdown of greenhouse gas emissions by sector for both electricity and natural gas combined. Of the total 141,701 tons of eCO_2 emitted due to energy use, 37 percent was from residential buildings and 63 percent was from commercial/industrial buildings.

Figure (b): Alameda Community Greenhouse Gas Emissions Breakdown (Residential and Commercial/Industrial) - Year 2005



Source: CACP Model output

Residential
In 2005, Alameda's 75,400 residents consumed 137,906,700 kWh of electricity, or about 4,430 kWh per household, and 12,180,175 therms of natural gas, or about 391 therms per household. This consumption resulted in a release of 89,084 tons of eCO_2. Major residential energy uses include refrigeration, lighting, space heating and water heating.

Commercial/Industrial
In 2005, Alameda's commercial/industrial sector buildings consumed 223,590,100 kWh of electricity and 4,886,714 therms of natural gas. This consumption resulted in a release of 52,617 tons of eCO_2 into the atmosphere.

Transportation Emissions

The transportation sector is responsible for about 53.2 percent of Alameda's greenhouse gas emissions. Motor vehicles driven within the City's geographical boundaries emitted approximately 161,395 tons of eCO_2 in 2005.

Calculations for transportation emissions are based on figures for total vehicle miles traveled (VMT) in the City of Alameda. MTC supplied the necessary VMT data, while BAAQMD provided data that enabled us to break down total VMT by percentage driven by a given vehicle type.

Solid Waste Emissions

In 2005, Alameda sent approximately 59,024 tons of solid waste to landfills. Alameda also has recycling and composting measures in place; however, due to lack of data availability, the emissions impact of these practices is not included in this analysis.

The way in which ICLEI's CACP software calculates solid waste emissions deserves detailed explanation. The software is designed to be used in communities with a variety of waste disposal methods, including open dumping, landfilling and incineration. The emissions calculations from waste disposal are based on the U.S. EPA's Waste Reduction Model (WARM) and are consistent with national standards. The CACP software calculates waste sector emissions based on a number of factors,

including: the methane recovery factor at the landfills to which the city's solid waste is sent; the total amount of solid waste sent to the landfill(s); the composition of the waste sent to the landfill(s); and emissions coefficients derived from the WARM model.

A weighted average of the methane recovery factors for the landfills to which Alameda sends its waste equals approximately 74.2 percent. This estimate is based on data supplied by the U.S. EPA's Landfill Methane Outreach Program (LMOP).

Based on emissions coefficients for the waste sector, and because more than 74.2 percent of the methane produced from Alameda's solid waste is estimated to be recovered (either captured perpetually under the liner of the landfill or captured and then flared), waste emissions appear to be slightly negative, -11,715 tons of eCO_2 in 2005.

However, because the model does not capture the emissions credit achieved through the city's recycling efforts, we are choosing to "zero out" the emissions credit attributed to landfilling for the purposes of this inventory. Zeroing out the emissions credit for landfilling is consistent with the action taken by a number of ICLEI members, including the City and County of San Francisco.

Furthermore, the benefits gained from recycling and the associated reduction in "upstream" energy use far outweigh sending waste to the landfill. For example, if Alameda recycled an additional 20,000 tons of waste, then the City would reduce its annual eCO_2 emissions by an additional amount of 53,000 tons.

Recycling reduces CO_2 emissions because manufacturing products with recovered materials avoids emissions from the energy that would have been used during extraction, transporting and processing of virgin raw materials. Recycling paper also conserves forests, which contribute to carbon sequestration – a process that removes carbon from the atmosphere and stores it for long periods of time. Both forests and organic material in the soil sequester carbon.

Further, recent studies have begun to question the U.S. EPA's estimates for the amount of methane that is actually captured by methane recovery systems at landfills. Many hypothesize that the efficiency with which methane recovery systems capture methane is currently overestimated, and that much more of the potent greenhouse gas is actually escaping from landfills into the atmosphere. The CACP software is designed to follow EPA guidelines and the tool will be updated appropriately when those guidelines change.

Table (2) shows the approximate breakdown of the materials Alameda sent to landfills in 2005. Organic materials such as food and yard waste disposed of in landfills decompose and emit methane, a greenhouse gas 21 times more potent than CO_2. Materials that do not breakdown and release greenhouse gases are aggregated into the "All Other Waste" category.

Table (2): Alameda Waste Composition

Waste Type	Waste Share
Paper Products	24.6%
Food Waste	15.6%
Plant Debris	3.4%
Wood/Textiles	17.3%
All Other Waste	39.1%
Total	100%

Source: StopWaste.Org

2. Municipal Operations Emissions Inventory

ICLEI's emissions analysis software and methodology enable a jurisdiction to inventory the emissions that result from municipal operations. As was noted earlier, the municipal inventory is a subset of the community inventory.

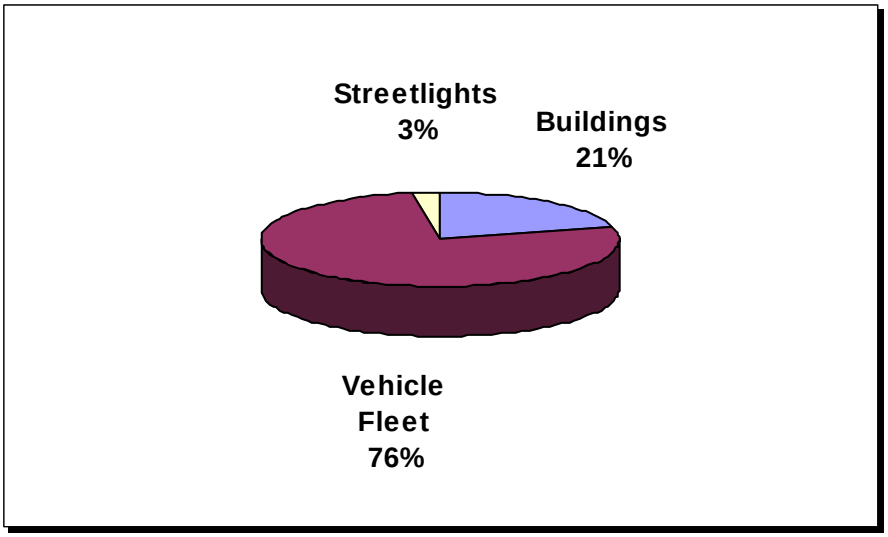
In the base year of 2005, Alameda's municipal operations generated 9,682 tons of eCO_2. As Table (3) and Figure (c) show, the City's vehicle fleet accounted for the majority of emissions, followed by buildings and streetlights.

Table (3): Alameda Municipal Emissions Summary

Potential Sources	Equiv eCO_2 (tons)	Energy (MMBtu)	Cost ($)
Buildings	2,003	50,219	Unknown
Vehicle Fleet	7,424	85,974	416,493
Streetlights	255	8,690	Unknown
TOTAL	9,682	144,883	416,493

Source: CACP Model output

Figure (c): Alameda Municipal Greenhouse Gas Emissions – Year 2005



Source: CACP Model output

Municipal emissions in Alameda constitute about 3 percent of Alameda's total emissions. Local government emissions typically fall between 1 to 5 percent of overall community emissions. As a relatively minor contributor to total emissions, actions to reduce municipal energy use may have a limited impact on Alameda's overall community emissions levels. However, municipal action has symbolic value and demonstrates leadership that extends beyond the magnitude of emissions actually reduced.

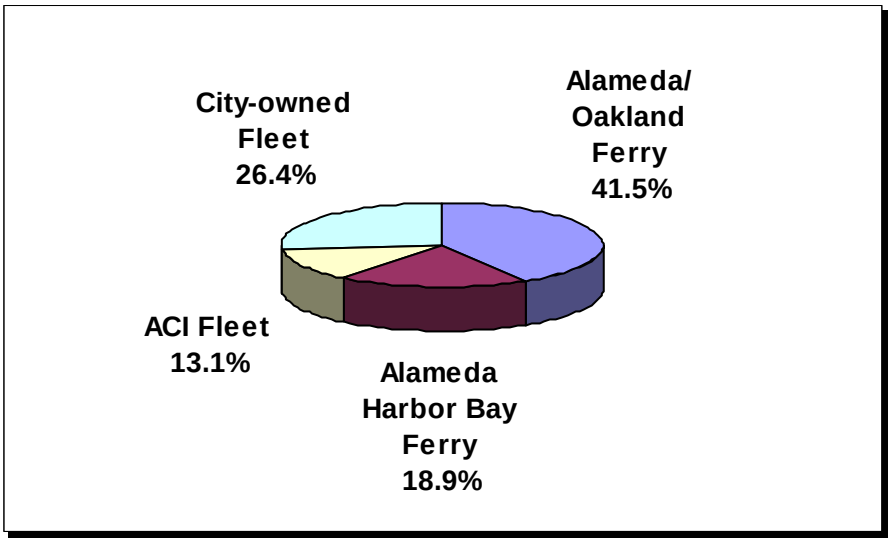
Energy/Stationary Source Emissions

In 2005, Alameda municipal buildings and facilities consumed 9,938,888 kWh of electricity and 162,978 therms of natural gas, which resulted in a release of 2,003 tons of eCO_2 emissions into the atmosphere. Municipal streetlights and traffic lights consumed 2,056,158 kWh of electricity, which resulted in a release of 255 tons of eCO_2 emissions into the atmosphere.

Transportation Emissions

The City's vehicle fleet consumed approximately 684,489 gallons of gasoline equivalent and emitted about 7,424 tons of eCO_2. The municipal fleet includes all vehicles owned and operated by the City of Alameda plus some contractor vehicles performing City functions (i.e., Alameda Harbor Bay Ferry, Alameda/Oakland Ferry and Alameda County Industries garbage trucks). As illustrated in Figure (d), 73.6 percent of the eCO_2 emissions are generated by the fleets that Alameda does not own or operate.

Figure (d): Alameda Municipal Vehicle Fleet Greenhouse Gas Emissions by Source – Year 2005



Source: CACP Model output

Solid Waste Emissions

The City sent 2,143 tons of solid waste to landfills in 2005. Based on available data and the methodology employed by U.S. EPA's WARM model, municipal waste emissions appear to be slightly negative at -32 tons of eCO_2. As was discussed in the section on community solid waste emissions (see page 10), this negative number will be zeroed out for the purpose of this inventory.

Table (4): Alameda's Emissions Summary

Alameda's Emissions Summary		
	Community Analysis	**Municipal Operations Analysis**
Base year	2005	2005
Quantity of eCO_2 emissions in base year (tons)	303,097	9,682

Source: CACP Model Output

III. Forecast for Greenhouse Gas Emissions

Based on the community and municipal operations emissions inventories developed for Alameda for the base year 2005, the next step was to forecast future emissions for the year 2020. The emission forecast represents a business-as-usual prediction of how greenhouse gas (GHG) emissions may change in the City of Alameda over time for the community sector.

The forecast projects the growth (or reduction) in greenhouse gas emissions that will occur in a given future year. Projections are based on the assumption that energy consumption will grow as population increases. For the community analysis, the forecast was conducted by applying population growth factors to Alameda's base year residential, commercial/industrial, and transportation data. For the municipal government analysis, no growth was anticipated in the municipal government operations. Table (5) provides an emissions summary for Alameda's base year and forecast year.

Table (5): Alameda's Emissions Summary

Alameda's Emissions Summary		
	Community Analysis	**Municipal Operations Analysis**
Base year	2005	2005
Indicators used to generate forecast	0.65% (Annual population growth rate based on ABAG data)	No growth anticipated
Quantity of eCO_2 emissions in base year (tons)	303,097	9,682
Forecast year	2020	2020
Business-as-usual projection of eCO_2 emissions in *2020* (tons)	329,867	9,682

Source: CACP Model Output and ABAG

Conducting an emissions forecast is essential for setting an emissions reduction target, since the amount of GHG emissions Alameda pledges to reduce will be derived from projected emissions.

IV. Conclusion

This baseline greenhouse gas emissions inventory report represents a "snapshot" of the greenhouse gases that the City of Alameda emits in its base year, 2005, on a community-wide level and a municipal level. The report also approximates the greenhouse gases that the City will emit in the year 2020.

This information will be used to help the City adopt an emissions reduction target and develop a climate action plan. The climate action plan consists of policies and measures that, when implemented, will serve to get the City to its target. The inventory also serves to inform the City regarding the major sources of greenhouse gas emissions. For example, the community-wide inventory for the City of Alameda reveals that the transportation sector is responsible for 53.2 percent of total emissions.

The inventory also reveals the fact that in Alameda, like all cities, the municipal government emissions represent a relatively small percentage of community-wide emissions, in this case only 3 percent. That being said, by proactively reducing emissions generated by its own activities, the Alameda government takes a visible leadership role in the effort to address climate change. This is important for inspiring local action in Alameda as well as for inspiring action in other communities.

Appendix A – Data Summary Reports, Data Sources, Assumptions and Notes for the Municipal Inventory

Alameda City

Government Greenhouse Gas Emissions in 2005

Summary Report

	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
Buildings	2,003	20.7	50,219	0
Vehicle Fleet	7,424	76.7	85,974	416,493
Streetlights	255	2.6	8,690	0
Waste	0	0.0		0
Total	9,682	100.0	144,883	416,493

Government Greenhouse Gas Emissions in 2005
Detailed Report

	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
Buildings				
Alameda City, CA				
Government Facilities				
Electricity	996	10.3	33,902	0
Natural Gas	1,007	10.4	16,298	0
Solar	0	0.0	19	0
Subtotal Government Facilities	2,003	20.7	50,219	0

Notes:
1. AP&T coefficient set is based on emissions data provided by Meredith Owens (based on the 2004 NCPA GHG report) and the Western Systems Coordinating Council/CNV emissions factors. Estimated average 2005 AP&T greenhouse gas emissions factors are 92.0 short tons CO2/GWh, 0.262 short tons CH4/GWh, and 0.009 short tons N2O/GWh.

Data Sources:
1. Electricity consumption and AP&T emissions data provided on October 24, 2006 by Meredith Owens, City of Alameda, owens@alamedapt.com, (510) 748-3947
2. Natural gas data provided by Greg San Martin, Climate Protection Program Manager, PG&E, GJS8@pge.com, (415) 973-6905, and Jasmin Ansar, Manager, Environmental Policy, PG&E, JxA2@pge.com, (415) 973-4570

Data collected and entered by Brooke Owyang Lee, Program Assistant, ICLEI, brooke.lee@iclei.org
Last updated October 30, 2006
Data summary file: City of Alameda GHG Data.xls and City of Alameda AP&T Emissions Factors 2005.xls

Subtotal Buildings	2,003	20.7	50,219	0
Vehicle Fleet				
Alameda City, CA				
ACI Fleet				
Diesel	973	10.1	11,222	272,893
CNG	1	0.0	9	143,600
Subtotal ACI Fleet	974	10.1	11,231	416,493

Notes:
1. The City of Alameda does not own or operate the Alameda County Industries fleet. However, it is included in the government emissions inventory because waste hauling is an essential municipal service. This record comprises the portion of fuel consumed by the ACI fleet for all service within the city, including the commercial/industrial, residential and government sectors.

Data Sources:
1. Fleet fuel consumption by vehicle type and associated costs provided on October 27, 2006 by Maria DiMeglio, Environmental Services Manager, City of Alameda, mdimegli@ci.alameda.ca.us, (510) 749-5893

Data collected and entered by Brooke Owyang Lee, Program Assistant, ICLEI, brooke.lee@iclei.org
Last updated December 13, 2006
Data summary file: City of Alameda GHG Data.xls

Government Greenhouse Gas Emissions in 2005
Detailed Report

	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
Alameda Harbor Bay Ferry (PW)				
Diesel	1,406	14.5	16,213	0
Subtotal Alameda Harbor Bay Ferry (PW)	1,406	14.5	16,213	0

Notes:
1. The City of Alameda does not own or operate the Alameda Harbor Bay Ferry fleet. However, it is included in the government emissions inventory because the City of Alameda Department of Public Works provides the ferry service for the community.

Data Sources:
1. Fleet fuel consumption provided on January 9, 2007 by Matt Neclario, Public Works Director, City of Alameda, mnacleri@ci.alameda.ca.us, (510) 749-5840

Data collected and entered by Brooke Owyang Lee, Program Assistant, ICLEI, brooke.lee@iclei.org
Last updated January 9, 2007
Data summary file: City of Alameda GHG Data.xls

Alameda/Oakland Ferry (PW)				
Diesel	3,082	31.8	35,535	0
Subtotal Alameda/Oakland Ferry (PW)	3,082	31.8	35,535	0

Notes:
1. The City of Alameda does not own or operate the Alameda/Oakalnd Ferry fleet. However, it is included in the government emissions inventory because the City of Alameda Department of Public Works provides the ferry service for the community.

Data Sources:
1. Fleet fuel consumption provided on January 9, 2007 by Matt Neclario, Public Works Director, City of Alameda, mnacleri@ci.alameda.ca.us, (510) 749-5840

Data collected and entered by Brooke Owyang Lee, Program Assistant, ICLEI, brooke.lee@iclei.org
Last updated January 9, 2007
Data summary file: City of Alameda GHG Data.xls

AP&T				
Gasoline	185	1.9	2,182	0
Diesel	109	1.1	1,262	0
Subtotal AP&T	295	3.0	3,444	0
DSD				
Gasoline	22	0.2	254	0
Subtotal DSD	22	0.2	254	0
Finance				
Gasoline	6	0.1	72	0
Subtotal Finance	6	0.1	72	0

Government Greenhouse Gas Emissions in 2005
Detailed Report

	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
Fire				
Gasoline	185	1.9	2,182	0
Diesel	174	1.8	2,009	0
Subtotal Fire	359	3.7	4,192	0
Golf				
Gasoline	13	0.1	152	0
Diesel	9	0.1	105	0
Subtotal Golf	22	0.2	257	0
Housing				
Gasoline	62	0.6	736	0
Subtotal Housing	62	0.6	736	0
IT				
Gasoline	8	0.1	90	0
Subtotal IT	8	0.1	90	0
Library				
Gasoline	3	0.0	36	0
Subtotal Library	3	0.0	36	0
Mastick				
Gasoline	1	0.0	7	0
Subtotal Mastick	1	0.0	7	0
MSC				
Gasoline	251	2.6	2,975	0
Diesel	211	2.2	2,436	0
Subtotal MSC	462	4.8	5,412	0
Parks				
Gasoline	133	1.4	1,574	0
Diesel	15	0.2	178	0
Subtotal Parks	148	1.5	1,753	0
Permit Center				
Gasoline	20	0.2	231	0
Subtotal Permit Center	20	0.2	231	0

Government Greenhouse Gas Emissions in 2005
Detailed Report

	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
Police				
Gasoline	478	4.9	5,623	0
Diesel	8	0.1	91	0
Subtotal Police	486	5.0	5,714	0
Public Works				
Gasoline	48	0.5	564	0
Subtotal Public Works	48	0.5	564	0
Rec				
Gasoline	20	0.2	234	0
Subtotal Rec	20	0.2	234	0

Notes:
1. Estimates of 2005 annual vehicle miles traveled (VMT) per vehicle based on current vehicle age and mileage were provided by Chad Mason.
2. Lawnmower VMT is excluded from this analysis due to lack of miles per gallon specifications and emissions factors for criteria air pollutants. VMT totaled 7,568 miles.
3. VMT data for AP&T's electric vehicle (608 mi.) and the Fire Department's CNG truck (4,334 mi.) are not entered in the Vehicle Fleet sector in order to avoid double-counting. The electricity and natural gas consumption is assumed to be captured in the Buildings sector.

Data Sources:
1. Fleet inventory and VMT provided on September 18, 2006 by Chad Mason, Pacific Municipal Consultants as reported by Matt Neclario, Public Works Director, City of Alameda, mnacleri@ci.alameda.ca.us, (510) 749-5840

Data collected and entered by Brooke Owyang Lee, Program Assistant, ICLEI, brooke.lee@iclei.org
Last updated December 15, 2006
Data summary file: City of Alameda GHG Data.xls

Subtotal Vehicle Fleet	7,424	76.7	85,974	416,493

Streetlights

Alameda City, CA

Streetlights				
Electricity	206	2.1	7,018	0
Subtotal Streetlights	206	2.1	7,018	0
Traffic Signals				
Electricity	49	0.5	1,672	0
Subtotal Traffic Signals	49	0.5	1,672	0

Notes:
1. AP&T coefficient set is based on emissions data provided by Meredith Owens (based on the 2004 NCPA GHG report) and the Western Systems Coordinating Council/CNV emissions factors. Estimated average 2005 AP&T greenhouse gas emissions factors are 92.0 short tons CO2/GWh, 0.262 short tons CH4/GWh, and 0.009 short tons N2O/GWh.

Government Greenhouse Gas Emissions in 2005
Detailed Report

	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

Data Sources:
1. Electricity consumption and AP&T emissions data provided on October 24, 2006 by Meredith Owens, City of Alameda, owens@alamedapt.com, (510) 748-3947

Data collected and entered by Brooke Owyang Lee, Program Assistant, ICLEI, brooke.lee@iclei.org
Last updated October 30, 2006
Data summary file: City of Alameda GHG Data.xls and City of Alameda AP&T Emissions Factors 2005.xls

Subtotal Streetlights	255	2.6	8,690	0

Waste

Alameda City, CA

Municipal Waste			*Disposal Method - Managed Landfill*
Paper Products	0	0.0	0
Food Waste	0	0.0	0
Plant Debris	0	0.0	0
Subtotal Municipal Waste	0	0.0	0

Notes:
1. In 2005, the City of Alameda's government operations sent an estimated 2,143.1 tons of solid waste to landfills. Because 74.2% of the methane produced by Alameda's solid waste is estimated to be recovered, waste emissions appear to be negative: -32 tons. Many cities choose to eliminate this emissions "credit" by replacing the waste tonnage input data with zero. StopWaste.Org urged ICLEI to do so for the purposes of this inventory. For future reference, the notes below include the original waste data that resulted in the negative emissions number.
2. Alameda's estimated waste composition:
    a. Paper products: 0.52%
    b. Plant Debris: 1.92%
    c. All Other Waste: 97.56%
3. The weighted average methane recovery factor for the City of Alameda is based on tonnage hauled to each landfill (74.2%). Other landfills include B & J/Hay Road, Bena, Foothill, Guadalupe, Kettleman Hills Facility, Potrero Hills, Zanker MPF and Zanker Road. These landfills receive less than 1% of the total waste from the City of Alameda.

Data Sources:
1. Government operations solid waste data (*included in the notes above)* provided on October 27, 2006 by Maria Di Meglio, Environmental Services Manager, City of Alameda Pubic Works Department, mdimegli@ci.alameda.ca.us, (510) 749-5840
2. Methane recovery factors for individual landfill sites (*explained in the notes above)* provided by Victoria Ludwig, Program Manager EPA Landfill Methane Outreach Program, Ludwig.Victoria@epamail.epa.gov

Data collected and entered by Brooke Owyang Lee, Program Assistant, ICLEI, brooke.lee@iclei.org
Last updated December 13, 2006
Data summary files: City of Alameda GHG Data.xls and City of Alameda Community Waste Data 2005.xls

Subtotal Waste	0	0.0		0
Total	9,682	100.0	144,883	416,493

Appendix B – Data Summary Reports, Indicator Report, Data Sources, Assumptions and Notes for the Community Inventory

Alameda City

Community Greenhouse Gas Emissions in 2005

Summary Report

	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)
Residential	89,084	29.4	1,688,689
Commercial	52,547	17.3	1,249,380
Industrial	70	0.0	2,398
Transportation	161,395	53.2	1,877,906
Waste	0	0.0	
Total	303,097	100.0	4,818,373

Community Greenhouse Gas Emissions in 2005
Detailed Report

	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)
Residential			
Alameda City, CA			
Residential			
Electricity	13,832	4.6	470,671
Natural Gas	75,252	24.8	1,218,018
Subtotal Residential	89,084	29.4	1,688,689
Subtotal Residential	89,084	29.4	1,688,689
Commercial			
Alameda City, CA			
Commercial			
Electricity	22,356	7.4	760,709
Natural Gas	30,191	10.0	488,671
Subtotal Commercial	52,547	17.3	1,249,380
Subtotal Commercial	52,547	17.3	1,249,380
Industrial			
Alameda City, CA			
Industrial			
Electricity	70	0.0	2,398
Subtotal Industrial	70	0.0	2,398

Notes:
1. AP&T coefficient set is based on emissions data provided by Meredith Owens (based on the 2004 NCPA GHG report) and the Western Systems Coordinating Council/CNV emissions factors. Estimated average 2005 AP&T greenhouse gas emissions factors are 92.0 short tons CO2/GWh, 0.262 short tons CH4/GWh, and 0.009 short tons N2O/GWh.
2. Industrial natural gas consumption data is reported within the Commercial sector due to PUC confidentiality rules that prohibit the release of such data in certain cases.
3. Known natural gas consumption for electricity generation within the City of Alameda has been removed from the commerical natural gas total in order to avoid double-counting.

Data Sources:
1. Electricity consumption and AP&T emissions data provided on October 24, 2006 by Meredith Owens, City of Alameda, OWENS@alamedapt.com, (510) 748-3947
2. Natural gas data provided by Greg San Martin, Climate Protection Program Manager, PG&E, GJS8@pge.com, (415) 973-6905, and Jasmin Ansar, Manager, Environmental Policy, PG&E, JxA2@pge.com, (415) 973-4570

Data collected and entered by Brooke Owyang Lee, Program Assistant, ICLEI, brooke.lee@iclei.org
Last updated December 15, 2006
Data summary files: City of Alameda GHG Data.xls and City of Alameda AP&T Emissions Factors 2005.xls

Community Greenhouse Gas Emissions in 2005
Detailed Report

	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)
Subtotal Industrial	70	0.0	2,398

Transportation

Alameda City, CA

Community Transportation

Gasoline	102,735	33.9	1,201,733
Diesel	58,659	19.4	676,173
Subtotal Community Transportation	161,395	53.2	1,877,906

Notes:
1. VMT data for 2005 is not currently available. The estimated 2005 VMT data was calculated by applying an annual population growth rate to 2004 MTC VMT data.
2. The VMT data provided by MTC includes Daily VMT (DVMT) for weekdays only. VMT including weekends is calculated with the MTC's weekdays/weekends VMT ratio: 1.1489. Hence Annual VMT = DVMT x (number of weekdays in the base year) + DVMT/1.1489 x (365 - number of weekdays in the base year).
3. The VMT by fuel and vehicle type is calculated using Alameda County VMT % (by vehicle type) and the default CACP fleet breakdown by fuel type.

Data Sources:
1. Citywide VMT data provided on July 18, 2006 by Harold Brazil, Air Quality Associate, Metropolitan Transportation Commission (MTC) hbrazil@mtc.ca.gov, (510) 817-5747
2. VMT by vehicle type data provided on July 5, 2006 by Amir Fanai, Principal Air Quality Engineer, Bay Area Air Quality Management District, AFanai@baaqmd.gov

Data collected and entered by Brooke Owyang Lee, Program Assistant, ICLEI, brooke.lee@iclei.org
Last updated October 11, 2006

Subtotal Transportation	161,395	53.2	1,877,906

Waste

Alameda City, CA

ADC			*Disposal Method -*
Plant Debris	0	0.0	
Subtotal ADC	0	0.0	

Notes:
1. In 2005, the City of Alameda sent an estimated 7,052 tons of ADC to landfills. Because 74.2% of the methane produced by Alameda's solid waste is estimated to be recovered, waste emissions appear to be negative: -82 tons. Many cities choose to eliminate this emissions "credit" by replacing the waste tonnage input data with zero. StopWaste.Org urged ICLEI to do so for the purposes of this inventory. For future reference, the notes below include the original waste data that resulted in the negative emissions number.
2. Alameda's waste tonnage by landfill:
    a. Altamont: 7,039.6 tons
    b. B&J / Hay Road: 0.07 tons
    c. Keller Canyon: 7.05 tons
    d. Kettleman Hills Facility: 0.25 tons
    e. Potrero Hills:5 tons
3. Alameda's waste composition:
    a. Plant Debris: 1.73%
    b. All Other Waste: 98.27%
4. The weighted average methane recovery factor for the City of Alameda is based on tonnage hauled to each landfill (74.2%). Other landfills

Community Greenhouse Gas Emissions in 2005
Detailed Report

include B & J/Hay Road, Bena, Foothill, Guadalupe, Kettleman Hills Facility, Potrero Hills, Zanker MPF and Zanker Road. These landfills receive less than 1% of the total waste from the City of Alameda.

Data Sources:
1. Landfill data (*included in the notes above)* provided on July 20, 2006 by Meghan Starkey, Senior Program Manager, Alameda County Waste Management Authority (StopWaste.org), mstarkey@stopwate.org, (510) 614-1699
http://www.stopwaste.org/home/index.asp?page=590
2. Methane recovery factors for individual landfill sites (*explained in the notes above)* provided by Victoria Ludwig, Program Manager EPA Landfill Methane Outreach Program, Ludwig.Victoria@epamail.epa.gov

Data collected and entered by Brooke Owyang Lee, Program Assistant, ICLEI, brooke.lee@iclei.org
Last updated December 13, 2006
Data summary file: City of Alameda Community Waste Data 2005.xls

Community-wide Waste	Equiv CO_2 (tons)	Equiv CO_2 (%)	*Disposal Method - Managed Landfill* Energy (MMBtu)
Paper Products	0	0.0	
Food Waste	0	0.0	
Plant Debris	0	0.0	
Wood/Textiles	0	0.0	
Subtotal Community-wide Waste	0	0.0	

Notes:
1. In 2005, the City of Alameda sent an estimated 59,024 tons of non-ADC solid waste to landfills. Because 74.2% of the methane produced by Alameda's solid waste is estimated to be recovered, waste emissions appear to be negative: -11,633 tons. Many cities choose to eliminate this emissions "credit" by replacing the waste tonnage input data with zero. StopWaste.Org urged ICLEI to do so for the purposes of this inventory. For future reference, the notes below include the original waste data that resulted in the negative emissions number.
2. Alameda's waste tonnage by landfill:
    a. Altamont: 52,821.98 tons
    b. Forward, Inc.: 2,013.1
    c. Keller Canyon: 787.47 tons
    d. Vasco Road: 2,730 tons
    e. Other landfills: 671.05 tons
3. Alameda's waste composition:
    a. Paper products: 24.6%
    b. Food Waste: 15.6%
    c. Plant Debris: 3.4%
    d. Wood/Textiles: 17.3%
    e. All Other Waste: 39.1%
4. The weighted average methane recovery factor for the City of Alameda is based on tonnage hauled to each landfill (74.2%). Other landfills include B & J/Hay Road, Bena, Foothill, Guadalupe, Kettleman Hills Facility, Potrero Hills, Zanker MPF and Zanker Road. These landfills receive less than 1% of the total waste from the City of Alameda.
5. Recycling and compost tonnage has been omitted from this analysis as complete recycling and compost data was not available.

Data Sources:
1. Landfill data (*included in the notes above)* provided on July 20, 2006 by Meghan Starkey, Senior Program Manager, Alameda County Waste Management Authority (StopWaste.org), mstarkey@stopwate.org, (510) 614-1699
2. Waste characterization data (*included in the notes above)* is based on the 2000 Alameda County Waste Characterization study available online at http://www.stopwaste.org/home/index.asp?page=590
3. Methane recovery factors for individual landfill sites (*explained in the notes above)* provided by Victoria Ludwig, Program Manager EPA Landfill Methane Outreach Program, Ludwig.Victoria@epamail.epa.gov

Data collected and entered by Brooke Owyang Lee, Program Assistant, ICLEI, brooke.lee@iclei.org
Last updated December 13, 2006
Data summary file: City of Alameda Community Waste Data 2005.xls

Community Greenhouse Gas Emissions in 2005
Detailed Report

	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)
Subtotal Waste	0	0.0	
Total	303,097	100.0	4,818,373

Alameda City

Community Greenhouse Gas Emissions in 2005

Indicators Report

	Equiv CO_2 (tons)	Energy (MMBtu)
Residential		
Residential		
Per household	2.9	55.8
Sector Average		
Per capita	1.2	22.4
Per household	2.9	55.8
Commercial		
Sector Average		
Per capita	0.7	16.6
Industrial		
Sector Average		
Per capita	0.0	0.0
Transportation		
Sector Average		
Per capita	2.1	24.9
Waste		
Sector Average		
Per capita	0.0	

This report has been generated for Alameda City, CA using STAPPA/ALAPCO and ICLEI's Clean Air and Climate Protection Software developed by Torrie Smith Associates Inc.

Appendix C – Data Summary Reports, Data Sources, Assumptions and Notes for the Community Emissions Forecast

Alameda City

Community Greenhouse Gas Emissions in 2020

Summary Report

	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)
Residential	98,216	29.8	1,861,792
Commercial	57,934	17.6	1,377,450
Industrial	78	0.0	2,643
Transportation	173,640	52.6	2,023,226
Waste	0	0.0	
Total	329,867	100.0	5,265,111

Community Greenhouse Gas Emissions in 2020
Detailed Report

	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)
Residential			
Alameda City, CA			
Residential			
Electricity	15,250	4.6	518,919
Natural Gas	82,966	25.2	1,342,873
Subtotal Residential	98,216	29.8	1,861,792
Subtotal Residential	98,216	29.8	1,861,792
Commercial			
Alameda City, CA			
Commercial			
Electricity	24,648	7.5	838,687
Natural Gas	33,286	10.1	538,764
Subtotal Commercial	57,934	17.6	1,377,450
Subtotal Commercial	57,934	17.6	1,377,450
Industrial			
Alameda City, CA			
Industrial			
Electricity	78	0.0	2,643
Subtotal Industrial	78	0.0	2,643

Notes:
1. AP&T coefficient set is based on emissions data provided by Meredith Owens (based on the 2004 NCPA GHG report) and the Western Systems Coordinating Council/CNV emissions factors.
2. Industrial natural gas consumption data is reported within the Commercial sector due to PUC confidentiality rules that prohibit the release of such data in certain cases.
3. Known natural gas consumption for electricity generation within the City of Alameda has been removed from the commerical natural gas total in order to avoid double-counting.
4. Projections are based on the assumption that consumption (and therefore emissions) will grow as the population increases. The annual population growth rate is extrapolated from the Association of Bay Area Governments' population projection data for 2000-2020 as published in Projections 2005.

Data Sources:
1. Electricity consumption and AP&T emissions data provided on October 24, 2006 by Meredith Owens, City of Alameda, OWENS@alamedapt.com, (510) 748-3947
2. Natural gas data provided by Greg San Martin, Climate Protection Program Manager, PG&E, GJS8@pge.com, (415) 973-6905, and Jasmin Ansar, Manager, Environmental Policy, PG&E, JxA2@pge.com, (415) 973-4570
3. Growth rates and household indicator data are based on Projections 2005, published by the Association of Bay Area Governments

Data collected and entered by Brooke Owyang Lee, Program Assistant, ICLEI, brooke.lee@iclei.org
Last updated December 15, 2006
Data summary file: City of Alameda GHG Data.xls

This report has been generated for Alameda City, CA using STAPPA/ALAPCO and ICLEI's Clean Air and Climate Protection Software developed by Torrie Smith Associates Inc.

Community Greenhouse Gas Emissions in 2020
Detailed Report

	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)
Subtotal Industrial	78	0.0	2,643
Transportation			
Alameda City, CA			
Community Transportation			
Gasoline	109,095	33.1	1,279,199
Diesel	64,545	19.6	744,027
Subtotal Community Transportation	173,640	52.6	2,023,226

Notes:
1. VMT data for 2005 is not currently available. The estimated 2005 VMT data was calculated by applying an annual population growth rate to 2004 MTC VMT data.
2. The VMT data provided by MTC includes Daily VMT (DVMT) for weekdays only. VMT including weekends is calculated with the MTC's weekdays/weekends VMT ratio: 1.1489. Hence Annual VMT = DVMT x (number of weekdays in the base year) + DVMT/1.1489 x (365 - number of weekdays in the base year).
3. The VMT by fuel and vehicle type is calculated using Alameda County VMT % (by vehicle type) and the default CACP fleet breakdown by fuel type.
4. Projections are based on the assumption that consumption (and therefore emissions) will grow as the population increases. The annual population growth rate is extrapolated from the Association of Bay Area Governments' population projection data for 2000-2020 as published in Projections 2005.

Data Sources:
1. Citywide VMT data provided on July 18, 2006 by Harold Brazil, Air Quality Associate, Metropolitan Transportation Commission (MTC) hbrazil@mtc.ca.gov, (510) 817-5747
2. VMT by vehicle type data provided on July 5, 2006 by Amir Fanai, Principal Air Quality Engineer, Bay Area Air Quality Management District, AFanai@baaqmd.gov
3. Growth rates and household indicator data based on Projections 2005, published by the Association of Bay Area Governments

Data collected and entered by Brooke Owyang Lee, Program Assistant, ICLEI, brooke.lee@iclei.org
Last updated October 11, 2006

Subtotal Transportation	173,640	52.6	2,023,226
Waste			
Alameda City, CA			
ADC			*Disposal Method -*
Plant Debris	0	0.0	
Subtotal ADC	0	0.0	
Community-wide Waste			*Disposal Method - Managed Landfill*
Paper Products	0	0.0	
Food Waste	0	0.0	
Plant Debris	0	0.0	
Wood/Textiles	0	0.0	
Subtotal Community-wide Waste	0	0.0	

Notes:

Community Greenhouse Gas Emissions in 2020
Detailed Report

	Equiv CO_2 (tons)	Equiv CO_2 (%)	Energy (MMBtu)
1. Given the fact that the community-wide waste and ADC tonnage were entered as zero tons in the base year inventory, the forecast for waste emissions is also zero. Reference 2005 Greenhouse Gas Emissions in 2005 waste sector notes for waste emissions analysis methodology and rationale.			
Subtotal Waste	0	0.0	
Total	329,867	100.0	5,265,111

Appendix C
Emission Analysis and Assumptions

EMISSION ANALYSIS AND ASSUMPTIONS

Please Note:
Greenhouse gas emissions reductions calculated are based on stated assumptions, and unless stated otherwise, assume that the entire measure is implemented as outlined.

GREENHOUSE GAS EMISSIONS REDUCTION MEASURES

- **Measure 1:**

  Require that all new major developments' short and long-term transportation emissions impacts are reduced by 10%.

  - Review land development regulations in light of Measure A constraints for the future development of Alameda Point to allow for compact development along transit lines with the goal to reduce greenhouse gas emissions.
  - Review and revise parking standards for commercial and residential developments to encourage the public's use of alternative modes of transportation and to limit the opportunity to park there.
  - Develop and implement a "smart growth" ordinance that promotes pedestrian, bicycle and transit oriented development and strongly supports TOD projects and initiate programs that could subsidize development programs that support "carless" population
  - Improve and expand the interconnected bike routes system and estuary crossings in Alameda with further consideration of Bike Alameda Correspondence
  - Revise ordinances to require the location of bicycle lockers and shower facilities in new and renovated commercial developments, as well the installation of more bike racks within existing commercial districts. Locate additional bike racks within existing commercial districts; and,
  - Revise street design standards to and re-engineer existing streets to promote pedestrian and bicycle use and encourage the use of alternative modes of transportation.

  - Assumptions:
    - For the purpose of this calculation, all VMT reductions are shown using gasoline passenger vehicles since they make up the overwhelming majority of VMT.
    - Average commute trip length is approximately 12 miles, according to the Association of Bay Area Governments 2002 Smart Growth Study.
    -

- Estimated cumulative eCO2 reduction: 1040 tons

- Assumptions:

    - Bike related measures: Improvements resulting from these four measures will result in 2% of the City's population reducing their annual VMT per capita by 10%.
    - Bike related measures: According to City staff, 100% of City streets will have sidewalks and 25% of City streets will have bike lanes.
    - For the purpose of this calculation, VMT reductions are shown from gasoline passenger vehicles since they make up the overwhelming majority of VMT.
  - Assumed 10% reduction in VMT as compared with business as usual from implementation of the entire Measure.
  - Used the Association for Bay Area Government's projections for population increase in 2020 (ABAG, Projections 2007).

- **Measure 2:**

  Provide transit and shuttles with signal priority lanes and queue jumpers to make transit a more attractive alternative to the automobile.

- Estimated cumulative eCO2 reduction: 167 tons
- Assumptions:
  - Improvements will result in 2% of the City's population reducing their annual per capita VMT by 10% through the use of public transportation.
  - For the purpose of this calculation, all VMT reductions are shown using gasoline passenger vehicles since they make up the overwhelming majority of VMT.

- **Measure 3**:

  Develop and fund alternative transportation strategies in the City's budget.

- Estimated cumulative eCO2 reduction: Negligible
- Assumptions:
  - This measure does not provide quantitative data.

- **Measure 4**:

  Continue to convert the City's fleet to alternative fuel vehicles, such as biodiesel, electric, and other alternative fuels.

- Estimated cumulative total eCO2 reduction: 5,654 tons
  - Breakout Below:
    - Diesel
      - Heavy Trucks: 1,347 tons
      - Marine: 4,034 tons
    - Gasoline
      - Auto Full Size: 41 tons
      - Auto Mid Size: 15 tons
      - Auto sub compact/compact: 7 tons
      - Heavy Trucks: 198 tons
      - Light Trucks/SUV/Pickups: 12 tons

- Assumptions:
    - The entire City diesel fleet will be converted to B100 by 2020, and gasoline fleet converted to alternative fuel vehicles.
    - The City of Alameda does not own or operate the Alameda County Industries fleet. However, it was included in the government emissions inventory and is included in this measure because waste hauling is an essential municipal service.
    - The City of Alameda does not own or operate the Alameda Harbor Bay Ferry or Alameda/Oakland Ferry fleet. However, it was included in the government emissions inventory and is included in this measure because the City of Alameda Department of Public Works provides the ferry service for the community.

- **Measure 5**:

  Encourage Alameda employers to provide opportunities for flex hours, compressed workweek and telecommuting schedules to reduce VMT and reintroduce transportation reduction programs.

- Estimated cumulative eCO2 reduction: 966 tons
- Assumptions:
    - Assumes that employees are evenly distributed amongst employers.
    - 50% of the employers will participate in measure.
    - 15% of employees with access to the program will participate.
    - Employee participants will realize a 15% reduction in annual VMT.
    - The calculation used gasoline passenger vehicles since they make up the overwhelming majority of VMT within the City.

- **Measure 6**:

  Expand the geographic area of the Work/Live ordinance to provide greater opportunities for reduced work-related commutes.

- Estimated cumulative eCO2 reduction: Negligible
- Assumptions:
    - This measure does not provide quantitative data.

- **Measure 7**:

  Evaluate an alternative fuel car share program.

- Estimated cumulative eCO2 reduction: 29 tons
- Assumptions:
    - A car share program is implemented.
    - For the purpose of this calculation, assume that all program users are shifting away from gasoline passenger vehicles to auto/gasoline/subcompact-compact/SULEV. This calculation used gasoline passenger vehicles since they make up the overwhelming majority of VMT.

- Type of vehicle used in the car share program is hybrid/electric, auto/sub compact-compact/SULEV.
- The car share program fleet contains 10 vehicles.
- 3 users per day per car, 25 vehicle miles per/user per/day, which equals 75 vehicle miles per/day per/car. Therefore, 750 vehicle miles per day for the entire fleet.
- Assume 221 days of use per year of use (business days per year).

- **Measure 8**:

  Reduce parking fees.

- Estimated cumulative eCO2 reduction: Negligible
- Assumptions:
  - This measure does not provide quantitative data.

- **Measure 9**:

  Develop park-and-ride lots and expand ridesharing opportunities in large-scale developments at major transportation access nodes.

- Estimated cumulative eCO2 reduction: 281 tons
- Assumptions:
  - Calculated the addition of one Park and Ride lot with 100 passenger vehicle spaces that are fully utilized during workdays throughout the year.
  - Used gasoline passenger vehicles since they make up the overwhelming majority of VMT within the City.
    - Average commute trip length is approximately 12 miles, according to the Association of Bay Area Governments 2002 Smart Growth Study.

ENERGY INITIATIVES

- **Measure 1**:

  Encourage the Alameda Public Utilities Board to require that Alameda Power & Telecom maintain and expand its source mix to 100 % carbon-free energy

- Estimated cumulative eCO2 reduction: 14,559 tons
- Assumptions:
  - Implementation of this measure would convert 15% of Alameda Power & Telecom's fossil fuel based energy sources to renewable energy by adding 5% wind and 10% landfill gas electricity. (Per Don Rushton, Alameda Power &. Telecom's Utility Planning Supervisor, (Simone Wolter from the City of Alameda contacted Don the week of October 29, 2007) expansion of wind and biomass & landfill gas are the only sources that can be expanded.)
  - Alameda Power & Telecom's current energy mix includes 85% renewable energy sources, which includes large hydro (per Power Content Label for 2006 found at www.alamedapt.com/electricity/label.html on November 5, 2007)
  - Alameda Power & Telecom's energy mix as of November 5, 2007 was as follows.

Energy Source	Mix
Biomass & Waste	9%
Geothermal	41%
Small Hydro	1%
Wind	6%
Solar	< %
Coal	8%
Large Hydro	28%
Natural Gas	7%
Nuclear	<1%
Other	<1%

- **Measure 2**:

  Require that all recommended City Council actions include an analysis or evaluation of whether the action supports or is consistent with Alameda's Local Action Plan initiatives and furthers progress toward the Greenhouse Gases Reduction Target.

- Estimated cumulative eCO2 reduction: Negligible
- Assumptions:
  - This measure does not provide quantitative data.

- **Measure 3**:

  Provide technical assistance for energy efficiency and track progress through recognition programs. If feasible, develop financial incentives to educate and encourage Alameda residents and businesses to be energy efficient.

- Estimated cumulative eCO2 reduction: 4,739 tons
- Assumptions:
  - Activities associated with this measure will result in 5% of households reducing electricity use by 10%.
  - Activities associated with this measure will result in a 0.5% reduction in commercial electricity use.
  - Based upon the energy savings goal of Alameda Power & Telecom's 10-year energy efficiency plan and greenhouse gas emissions for FY 2005.

- **Measure 4**:

  Amend the Alameda Municipal Code to include sustainable design and green building standards for all new, substantially expanded, and remodeled buildings.

NOTE: This measure has five parts that are broken out below for analysis.

1) A requirement that all new City of Alameda buildings meet minimum LEED standard by 5 years;
- Estimated cumulative eCO2 reduction: Not quantifiable
- Assumptions:

- A new LEED Gold building will achieve approximately 26.6% - 32.9% savings in energy use. Source: LEED for New Construction and Major Renovations, version 2.2. Available online at: https://www.usgbc.org/showfile.aspx?DocumentID=1095 (October 2005)
- Information regarding new City buildings is unknown at this time (i.e. square footage, energy use, etc.).

2) A requirement that all major new commercial buildings meet minimum LEED standard by 5 years;

- Estimated cumulative eCO2 reduction: 4,817 tons
- Assumptions:
  - New LEED 'certified' buildings are on average 20% more energy efficient. Source: LEED for New Construction and Major Renovations, version 2.2 For Public Use and Display. Available on line at: https://www.usgbc.org/ShowFile.aspx?DocumentID=1095 (October, 2005)
  - Used projections from the Association of Bay Area Governments (ABAG, Projections 2007) for additional jobs in the City of Alameda by 2020 (compared to 2005).
  - Assumed that 50% of new jobs will be located in newly constructed commercial/industrial buildings (the remaining 50% would be located in existing buildings, which is not part of this measure).

3) A requirement that all major mixed-use developments such as Alameda Point and Alameda Landing meet a minimum LEED standard;

- Estimated cumulative eCO2 reduction: Not quantifiable
- Assumptions:
  - LEED for Neighborhood Development is a USGBC Rating System that applies to neighborhoods, such as mixed-use developments. This rating system is currently in the pilot phase. LEED-ND certified neighborhoods should see energy efficiency gains, yet averaged data is not yet available. Specific scale and type of mixed-use structures would also be required to produce quantifiable data.

4) A requirement that all new large-scale residential subdivisions meet a minimum LEED residential or neighborhood standard; and,

- Estimated cumulative eCO2 reduction: 1,531 tons
- Assumptions:
  - New large-scale residential subdivisions must meet a minimum LEED for Homes "certified" level.
  - A LEED for Homes 'certified' home in California is required to be at least 16% above Title 24 energy requirements. This means that a certified home is at least 16% more efficient than a standard built home that meets Title 24. (Per phone conversation with Patti Heath at Davis Energy Group on Nov 7, 2007, the organization that runs the LEED for Homes Pilot program for USGBC).
  - Used the Association of Bay Area Governments new household projections for 2020 (ABAG, Projections 2007).
  - Assumed all new households added to the City by 2020 will be new homes that are LEED 'certified,' meaning they are on average 16% more energy efficient.

- Calculated 16% electricity efficiency as compared to average household electricity use in baseline data.

- **Measure 5**:

  Develop a program to reduce use of 2-cycle combustion engines, including the enforcement of environment of existing ordinances. Encouraeg the establishment of trade-in programs.

- Estimated cumulative eCO2 reduction: Negligible
- Assumptions:
  - This measure does not provide quantitative data.

- **Measure 6**:

  Develop a wood-burning prohibition ordinance to reduce air pollution for new residential construction.

- Estimated cumulative eCO2 reduction: Negligible
- Assumptions:
  - This measure does not provide quantitative data.

WASTE INITIATIVES

- **Measure 1:**

  Adopt "Zero Waste Strategy" Programs and Ordinances

  Examples:
  1) A ban on polystyrene to-go containers (i.e. Styrofoam);
  2) A stronger environmental purchasing policy;
  3) A stronger Construction and Demolition ordinance;
  4) Work with AUSD to implement recycling programs including food waste, recycling programs and provide on-going recycling education at schools; and,
  5) Work with the State Department of Conservation to develop more centrally located recycling drop-off areas for bottles, glass, batteries and other recyclable materials.
- Estimated cumulative eCO2 reduction: 44,114 tons
- Assumptions:
  - This measure will result in a 30% reduction in waste to landfill in all waste categories.
  - Data used from City of Alameda baseline inventory (Jan 2007).
    - Each waste type was entered separately. Total reduction was calculated by adding reductions in each waste type according to CACP waste type categories: Mixed Paper, Food Waste; Plant Debris, Wood, and Mixed Recyclables.

        - Alameda Waste Composition data used for the baseline report listed a waste type of "All Other Waste" – which was translated into the CACP category of "Mixed Recyclables" for this calculation.

- City staff asked to see expected emissions reductions from a 50% reduction in waste to landfill in all waste categories.
- Estimated cumulative eCO2 reduction: 73,526 tons
- Assumptions:
    - Data used from City of Alameda baseline inventory (Jan 2007).
        - Each waste type was entered separately. Total reduction was calculated by adding reductions in each waste type according to CACP waste type categories: Mixed Paper, Food Waste; Plant Debris, Wood, and Mixed Recyclables.
        - Alameda Waste Composition data used for the baseline report listed a waste type of "All Other Waste" – which was translated into the CACP category of "Mixed Recyclables" for this calculation.
- **Measure 2**:

    Encourage the development of the biodiesel industry in Alameda, including local collection of used animal fats and vegetable oils for rendering into biodiesel. In addition, the City should develop policies that encourage the location of biodiesel and compressed natural gas (CNG) facilities in Alameda through implementation of required Municipal Code revisions.

- Estimated cumulative eCO2 reduction: 69 tons
- Assumptions:
    - Calculations are based upon data from non-municipal diesel passenger vehicles and light truck/SUV/pickup vehicles in the City.
    - Data from diesel passenger vehicles and light truck/SUV/pickup was utilized for calculations, taken from the City of Alameda Baseline Inventory (Jan 2007).

INCREASING PUBLIC AWARENESS AND PARTICIPATION

- **Measure 1**:

    Develop a multi-faceted community outreach program to increase public awareness and participation in greenhouse gas reductions with a special emphasis on transportation

    - A citywide education campaign or forums in which the community can engage in a meaningful discussion about climate change;
    - Information provided at the Permit Center, the City of Alameda website, and other public venues about global warming and local actions and programs to reduce greenhouse gases;
    - A brochure or press kit that showcases the City of Alameda's sustainability efforts and greenhouse gas reduction goals;
    - A review of all environmental programs and materials to ensure equitable distribution of resources, technical assistance and financial support to all citizens of Alameda (i.e. resources available in multiple languages, easily accessible for seniors);

    - An "Adopt a tree" program in which people can donate money in order for the City to plant a tree; and
    - Advertise City energy and recycling audits, efforts and programs for sustainability.
    - An emission off-set program and junk mail reduction partnership to reduce waste streams and potentially generate revenue for the City to be used for other outreach activities.
- Estimated cumulative eCO2 reduction: Negligible
- Assumptions:
    - This measure does not provide quantitative data.

Appendix D.1
Save Alameda from Climate Change Survey

Results of the "Save Alameda from Climate Change!" Survey

The survey was handed out during the April 18, 2007 Climate Protection Task Force Open House, the Earth Day Celebrations on April 21, 2007 and at the Permit Center until May 16, 2007. A total of 36 surveys were completed. The survey contained 28 questions that targeted the use of energy and water, building materials, and waste generation and recycling activities. This summary combines all comments for each question and totals all numeric values.

What is important to Alameda residents?

Question 1: Is there a local environmental issue you are especially concerned about? (Rank your top five)

	Selection					
	No 1	**No 2**	**No 3**	**No 4**	**No 5**	**Not ranked, but marked**
Transportation	7	1	4	1	0	0
Alameda's Growth and Development	1	2	1	0	1	3
Housing near transit	1	3	1	1	1	4
Alameda Point Redevelopment	2	1	2	2	3	7
Water and Energy consumption in Alameda	2	0	3	3	2	6
Waste and Recycling	1	2	2	5	3	6
How can we reach more people?	1	2	0	0	0	1
Protecting and preserving Open Space	4	3	2	2	3	3
Protecting Wildlife and Habitat	4	2	0	5	2	2
Quality of Life	1	1	0	0	1	4
Sustainable Design	0	4	4	2	4	5
Bringing Green Businesses to Alameda	0	3	4	1	2	5
Other (Please describe)	Bay quality; housing near jobs; pedestrian/bike access from west end to downtown oak; green energy; zero net use standards					

Question 2: What do you do to protect the environment?

Recycle; compost; bicycle; use public transportation; drive less; fluorescent light bulbs; reduce consumption; drive hybrids/electric cars; use cloth grocery bags; purchase locally grown organic food; use a clothesline for drying; use energy efficient appliances; garden for habitat and growing food; conserve water and natural resources; walk as much as possible; contribute to Sierra Club; respect bay; wildlife; drive less; teach children to be aware of their activities; recycle containers; do not purchase bottled water – use refillable water bottle; use travel mug

Question 3: What environmental actions would you like to see your neighbors participate in?

Not using leaf blowers; bike and walk; carpooling; planting trees; more use of solar; more efficient cars; more working from home; not dumping down storm drains; drive hybrid/electric cars; reduce fossil fuel use; reduce consumption; line dry clothes; proper use of recycling bins; water conservation; purchase fewer disposables; use of and support for a transit system serving neighborhoods; noise and pollution reduction by not hiring people who use noisy lawn mowers; leaf blowers; more recycling of glass/plastic; what they are interested in doing - forcing the community to follow a political agenda is not right; trash clean-up; walk more; use travel mugs

Question 4: How do you think people could come together and make a significant change in Alameda?

Community volunteer projects; participation in Climate Action Task Force; support council members that are "green"; community outreach programs; specify changes needed; display benefits to individuals; provide resources to make changes as simple as possible; implement sustainable development; improve public transportation; participate in FreeCycle; limit car usage; gear housing around transit; community cooperatives; neighborhood meetings; discontinue use of leaf blowers and plastic grocery bags; make Earth Day mandatory in Alameda; more education; more events to encourage "green" living; more strict energy efficiency standards; more information in newspapers and schools; education; education; education; City Council must take lead in this; people should get rid of plastic bags and non-biodegradable to go containers; education from non-profit organizations - not government; use electric cars and carpool when possible; people need more help/info on what to do with waste and recycling; participate in community gardening

Question 5: What kind of programs should the City and the Community develop to provide more education to the public on environmental issues?

School programs; showings of documentaries such as "An Inconvenient Truth" & "Who Killed the Electric Car?;" ways to reduce car usage; rebate programs for community involvement; personalize education to affect people personally; get local business associations involved as "green" leaders; reduce or eliminate plastic grocery bags and Styrofoam containers; only allow paper; cloth and bio-bags; hands-on demonstrations; incentives for participation; more information in newspapers; ad campaigns - maybe banners on lampposts; maybe green report in local paper; there should be lectures at the library or college; some sort of incentive for green business and homes; not from the City; the community should come together; our government has caused the pollution (airport/Alameda Point) - three dump trucks to collect garbage; bird tours at the wildlife refuge on shoreline; bike to work days; Farmers Market promotion; local foods day; show people how living with sustainability in mind is cool; fun; not just a limitation; more readily available information on local transportation alternatives; have pedestrians; bicyclists and transit riders come first when it comes to redevelopment plans and parking policies; minimize parking and price it according to its environmental impact; develop electric cable car shuttle up/down one or two; main streets or to BART; have farmers market on East End and alternate with West End as needed; give talks at schools for parents at night; outlaw plastic bags at store; put solar panels on schools; plant more trees; provide resources to make transition to 'green' ways as simple as possible; develop website; standard set of presentations to present at various venues; encourage businesses to have green policies to reduce energy consumption; use each city event to educate citizens on more sustainable way of living; provide a local recycling center for Styrofoam; develop more bike lanes; provide more info on greening homes

What transportation choices do Alameda residents make?

Question 6: How many trips do you take on weekdays?

(For instance: Going to the store and back = two trips).

On average, the surveyed take 5.6 trips a week.

Question 7: Do you bunch your errands to where you have to go?

On average, 32 surveyed try to bunch errands together and walk 3.8 times a week to do errands.

Question 8: How many people live in your household?

On average, the surveyed have 2.8 members in their households.

Question 9: How many cars are in your household?

Of those surveyed, 11 have one car in their household, 18 have two cars in their household, and 6 reported having three cars in their household.

Question 10: How many car trips does your household do in a week? 12.5

Question 11: How many people in your household take public transit? 37

How often in a week? Once a week = 8
5 days a week = 8
More than 5 times a week = 4

What waste and recycling choices do Alameda residents make?

Question 12: Does your home have recycling containers available? Yes = 36 No = 0

Question 13: Do you recycle?

Paper	Yes = 35	No = O
Plastic bottles and containers	Yes = 35	No = O
Glass bottles	Yes = 35	No = O
Cans	Yes = 35	No = O
Compact Fluorescent Bulbs	Yes = 24	No = 11
Batteries (Household/Car)	Yes = 33	No = 2
Food Scraps	Yes = 29	No = 6

Question 14: Do you recycle or compost garden waste? Yes = 20 No = 4.

If not, why? Small yards/gardens are the reason for not composting;yes, because it's environmentally good practice and provides compost for my garden

Question 15: Do you recycle food scraps?

In your own garden? Yes = 15 No = 15

In your green bin? Yes = 29 No = 7

Question 16: If you do not currently participate in recycling, what would make it easier for you to recycle?

Less mixed-content packaging; more recycle-marked packaging

Question 17: If you are a gardener, do you choose plants because they are native and drought resistant plants? Yes = 14 No = 1

If not, why? Water conservation not an issue.

Question 18: Can you readily find information on drought resistant plants and sustainable gardening? Yes = 23 No = 2 Sometimes = 1

If not, what would help? Nurseries should provide more information.

Question 19: When you purchase items; do you consider where the item is produced? Or if it has recycled content? Yes = 28 No = 2

Question 20: If you own a home and need to do repairs; do you purchase environmentally friendly products? Yes = 13 No = 1

If not; why? Cost and availability.

Question 21: Do you need help finding environmentally preferable products? How can we help?

Yes = 4 No = 5; Lists with links on websites such as the City's website and some sort of raking system; hardware stores and nurseries could have displays of such products;more clear markings on products themselves

What do Alameda residents think about development standards?

Question 22: Do you think the City should develop development standards and guidelines that encourage:

Small-scale residential and commercial use of solar energy	Yes = 31 No = 2
The use of small-scale windmills in Alameda	Yes = 27 No = 3
The use of alternative building methods (i.e. strawbale construction)	Yes = 39 No = 3
The re-use of water from showers, washing machines and dishwashers for landscape irrigation	Yes = 31 No = 3

Question 23: Should the City require that all new residential, public and commercial development meet a specific development standard such as:

Increased energy efficiency, higher than the state requirements	Yes = 33 No = 1
Reduced use of drinking water for flushing etc	Yes = 26 No = 6
Increased insulation to reduce the demand for heating and cooling	Yes = 28 No = 3

Question 24: Should the City make a concerted effort to attract businesses that generally subscribe to sustainable practices, like the biodiesel industry and sustainable development practitioners? If yes, what kind of businesses?

Yes = 15 No = 1; Bio-diesel; solar panel manufacturing; green building material manufacturing; recycling companies; water purification industries; organic food organizations that support schools; electric car manufacturing; more green businesses; coops and non-profits etc; no - stick to roads/ schools/safety planning/zoning; sustainable builders; organic foods; recycled product and non-profit organizations

What do Alameda residents think about the Task Force?

Question 25: How did you learn about the Climate Protection Task Force and the Local Action Plan?

Newspaper; Internet; flyers; word of mouth; saw survey at the Permit Center; Earth Day fair

Question 26: Would you like a Task Force Member to attend a community or neighborhood meeting and present information about the Local Action Plan that will reduce greenhouse gas emissions?

Yes = 3 (Mastick Senior Center; WABA; Harbor Bay Isle Manager)

Question 28: Do you have any additional comments?.

As suggested at the transportation table, I'd like to see a local bus traveling a Park-Encinal-Webster-Lincoln-Loop every half hour. I think it would be a useful supplement to the current AC transit routes and would be used by shoppers.

Please continue to enforce historic preservation and include alternative energy requirements for all new construction and remodels.

Please focus on the areas with the greatest effect.

What's the status of clotheslines on Bay Farm. Do they have clotheslines cops? I really think this should be encouraged. When I walk along the shorelines between Park and Towata I don't see garbage cans – Why not? Anything we can do to keep the shoreline clean is important.

Don't be meek, go for it!

Please keep in mind the priority order based on our measurements (97% non-municipal use => community outreach must be effective); top contributor – transportation, we need to get people out of cars, don't forget carpooling; biking, walking, transit; 2nd contributor is natural gas; 3rd contributor is electricity

I'm disappointed the City has this Task Force,; we pay to much in taxes already, please disband this Task Force, if it is financed by the city.

Waive parking meters for electric cars, create tax incentives for electric vehicle purchase

Keep up the good work!

Use of incandescent bulbs should be discouraged; but not outlawed. At least not until fluorescents are available that fit my piano lamps, refrigerator, oven, and antique floor lamp and don't burn out in an enclosed fixture. I've had two that claimed they wouldn't burn out, but did. Put the Task Force and its meeting schedule on the City website.

This is a great survey. I hope people take the time to fill it out. One town can start and help to shape the way, so others can follow soon! Now we just need the Nations to follow; too! One last note: Provide the children of Alameda with the knowledge of education on classes about the environment and what we can do to help. They are going to make the difference.

I think the environmental issue includes things like getting beyond pursuing only our own selfish desires and considering the way our actions affect others/ the world around us. Therefore, activities and programs that encourage out-of-the box thinking/compassion/self-mindfulness are important. The Arts, for example; in addition to bringing this message to consumers.

If we used nuclear power (clean) we could use electric cars, heat with electric and do away with most of our pollution. Politicians are too much a part of this whole mess.

We need a community development fund for climate change. Funded by Economic Development and in revolving low-interest and/or no-interest loans (grants?) accounts that would pay for home and business energy efficiency; improvements; earthquake retrofits; insulation (homes/business); recycling systems; green vehicle purchases; etc. including historic preservation/restoration on historic buildings when accompanied by energy efficiency upgrades; weatherization; and other green initiatives. I have more ideas and input; and am happy to keep doing so.

Appendix D.2
Bike Alameda Correspondence

"Encouraging the everyday use of the bicycle in and around Alameda"
PO Box 2732

bike alameda

Alameda, CA 94501
(510) 595-4690
www.bikealameda.org
A 501(c)(3) organization

February 13, 2007

For the attention of the Climate Protection Project Task Force Members:

BikeAlameda recently became aware of the Climate Protection Project Task Force. The purpose of this letter is to provide you a brief background on our Alameda based non-profit organization, relay how BikeAlameda can support the Task Force's efforts in promoting bicycling (zero emissions) to avoid duplication of effort, and to make concrete suggestions on actions we feel the city should take to promote bicycling as a mode of transportation in order to reduce Alameda's impact on the environment.

BikeAlameda's mission is to encourage everyday use of the bicycle in and around Alameda. Founded in 1999, BikeAlameda serves the community through a variety of means described below. BikeAlameda believes in safe streets, active, healthy citizens, and vibrant, walkable business districts and neighborhoods. We are a nonprofit 501(c)(3) California corporation. BikeAlameda currently offers Alameda the following services to support bicycling as a mode of transportation. These offerings support the Task Force's goal to reduce green house gas emissions as biking is zero emissions:

- Bike Safety Classes (Teen Class, Adult Class and On-the-Road Class)
- Bicycling and Walking Map of Alameda
- Valet Bike Parking at Alameda Community Events
- Bike to Work Day Energizer Stations
- Ask "Dr. Sprocket" Advice support - Expert e-mail response to questions Alamedan's may have about biking, most commonly about how to address various concerns and issues with bicycling to work.
- Literature: Family Safety Flyer, Bicycling Street Smarts Booklet, and Handy Guide for Cyclists Reference Card
- Consultation with the City regarding bicycling advocacy matters

We had an extensive discussion at our last board meeting to develop the following prioritized list of recommended actions the City of Alameda should take to significantly improve bicycling infrastructure and promote bicycling in Alameda. For your awareness, BikeAlameda assisted Alameda in developing a Bicycle Master Plan in 1998, which can be viewed at www.bikealameda.org/info/bikeplan.html

"Encouraging the everyday use of the bicycle in and around Alameda"
PO Box 2732

bike alameda

Alameda, CA 94501
(510) 595-4690
www.bikealameda.org
A 501(c)(3) organization

Suggested Action Items Regarding Bicycling:

1. Implement bike plan which includes hiring a bike/pedestrian coordinator. Two years ago there were two people who handled bike/ped/transit issues, now there is only one. We would estimate that since the adoption of the Bicycle master Plan (BMP) in 1998, only 10% have been implemented. Above and beyond hiring someone who can lead the backlog of BMP work, we recommend the following short term and long term projects we feel are the most critical.

2. Implement the following Short Term and Long Term Projects

SHORT TERM (next two years):

1. Update the bike plan (currently planned for fall 2007)
2. Implement Central Avenue bike lanes (BMP Project #2)
3. Modify Bay farm Island bridge access two-ay bike path on Fernside(Grant is already won, just needs to be implemented)
4. Implement bike lanes around Alameda Towne Center on Otis Drive, Shoreline Drive, and Park Street.
5. Implement community and employer outreach programs (BMP Section 4.6)
6. Continue to support bike to work day (BMP Section 4.6.6)

LONG TERM (next 5 years):

1. Implement Estuary Crossing (BPM Project #1)
2. Implement citywide bike rack program (BMP objective 8.6, BMP Section 4.4 Recommendation #3)
3. Implement Bay Farm Island Bikeways (BMP Project #11)
4. Implement citywide bike education/safety program in the schools (BMP section 4.5). This could include supporting BikeAlameda's bike safety classes through subsidy and/or publicity.

3. Lead by Example - Promote bicycling to work within city departments. As the city is the largest employer in town, BikeAlameda would like to work closely with the city to promote bicycling to work amongst their employees, monitor progress and then use what we've learned as a model to reach out with the city to other employers in town to promote biking to work. Bike to Work Day could be used as a spring board, but we view more extensive work would be needed (flyers/email to city employees, bike classes, bike rack checks at city buildings, address concerns/issues, etc.).

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4. Enforce current zoning rules, such as the bike rack policy and required monitored bike parking at city events. We feel building inspectors and planners need re-education on current codes related to bicycling to ensure adequate enforcement.

5. Adopt Routine Accommodation for infrastructure, following MTC standards and encourage Planning and Public Works staff to participate in new bike/ped training. Routine Accommodation is a commitment from the city that all road infrastructure changes will consider non-motorized transportation needs during the planning, design, funding, and construction of all types of transportation projects.

6. Fire/Police involvement in bike safety education including elementary school rodeos as done previously.

7. Include bike maintenance clinics at city events (BMP 4.6)

8. Implement a bicycle street signage program similar to the purple signs in Berkeley to display distance to destinations (BMP objective 8.5)

For any questions or concerns please contact me at lucy@bikealameda.org. For more information our website is http://www.bikealameda.org/

Sincerely,

Lucy Gigli, President BikeAlameda

Appendix D.3
Biodiesel Recommendations

RECEIVED
MAR 19 2007
PERMIT CENTER
ALAMEDA, CA 94501

ALAMEDA CLIMTE PROTECTION TASK FORCE
Proposed Pilot Program Agenda to Switch Diesel Vehicle Fuel Biodiesel

I propose that the Climate Protection Task Force request the city of Alameda to commence a pilot program to a) switch the fuel source for all city owned diesel vehicles from petroleum diesel to biodiesel (initially a B-20 blend); b) to promote city wide availability and use of biodiesel in diesel vehicles; and to c) encourage/require the recycling of all commercial waste vegetable oil.

I volunteer my services to act as the resource-liaison person to work with a designated city official to achieve the above referenced goals. I believe this is quite doable simply by building on the programs being successfully implemented in other cities such as San Francisco and the work of its Biodiesel Task Force. The following is a brief out line of the goals of this transition:

1. Create and Implement a Written Protocol for the Pilot Program to Switch to Biodiesel targeting all or some of the Following Vehicles. :
    - Ferries to and from San Francisco
    - All City Diesel Vehicles from (Fire Trucks, etc.)
    - School District – School Buses
    - Waste management
        - Garbage Trucks
        - Recycle Trucks
2. Availability
    - City lead the way with fleet vehicle use
    - Incentives to gas station or biofuels station owners such as:
        - Fee waivers
        - Stream line, easy to understand permitting process
        - Promote the creation of a Marine Fueling Station
3. Recycle Waste Vegetable Oil (led by Health Department inspections of restaurants)
    - Public utility issue (save $$$ on grease in sewer system)
    - Less pollution
    - Converted into clean biofuels.
4. *Certain New Vehicles Purchases Should be Electric –*
        - *Phoenix Motor Car – Has already sold 4 SUVs to PG&E (will be delivered in June)*
            - *100+ mile range (to increase to 250 within a year) – fully loaded, 5 passengers, highway speed*
            - *10 minute recharge (special device) or trickle – overnight recharge.*
            - *0-60 in 10 seconds; top speed 95 mph*
5. Attached is a Biodiesel Fact Sheet

BIODIESEL FACT SHEET:

Compiled by Ron Silberstein 03-16-07

Biodiesel – Definition:

- Biodiesel is a clean, renewable fuel that is simply, safely and cleanly processed from vegetable oils and/or animal fats.[1, 2]
- Biodiesel is methyl esters of triglyceride fatty acid chains. 100 lbs vegetable oil + 10 lbs methanol or ethanol + catalyst (hydroxide) = 100 lbs biodiesel + 10 lbs glycerin.

Biodiesel is Clean:

- U.S. Department of Energy study showed that the production and use of biodiesel, compared to petroleum diesel, resulted in a 78.5% reduction in carbon dioxide (green house gas) emissions.[2, 4]
- Biodiesel use results in a 90% reduction in EPA targeted air toxins.[2]
- Biodiesel use produces *no* sulfur dioxide (the cause of acid rain).[2, 4]
- Biodiesel reduces particulate matter emissions by 47%, unburned hydrocarbons emissions by 67% and carbon monoxide emissions by 48%.[8]
- Biodiesel is the only alternative in the country to have successfully completed the EPA-required Tier I and Tier II health effects testing under the Clean Air Act.[2]
- The latest research from the National Renewable Energy Lab shows no increase (decreases are possible) of Nitrogen Oxides.
- Even when blended with petroleum diesel, biodiesel can significantly reduce diesel engine exhaust PM, CO HC, S and toxics.[9]

Biodiesel is Renewable:

- Biodiesel can be made from canola (rape seed), mustard seed, soy beans, sunflower seeds, grape seeds, olives, corn, algae, jatropha or any vegetable oil or animal fat. The most efficient source for plant based oil is currently from algae. While algae hold enormous potential, there is no commercial algae production for biodiesel today. A few labs and one VC backed company are attempting to manufacture it on a commercial scale. [2, 3, 5]
- Soybeans, one of the most inefficient sources of feed stock for biodiesel, uses one unit of energy to produce 3.24 units of energy. Gasoline, hydrogen and ethanol have lower to negative energy balances.[2, 4, 5]
- Biodiesel made from recycled feedstock (waste vegetable oil – from restaurant fryers, etc.) uses one unit of energy to create 7 units of energy.[9, 7]

Diesel Engines are Extremely Efficient

- Diesel engines (compression ignition) are 30% to 40% more efficient than gasoline engines.[9]

- Diesel engines are one of the most reliable, energy efficient and powerful propulsion systems. [9]
- Diesel engines have a long life relative to gasoline engines. [9]

Biodiesel has Numerous Economic Benefits

- Biodiesel could be produced entirely inside the United States.
- There are little or no costs needed to make technology upgrades – existing diesel engines can use 100% biodiesel with little or no modifications. [1, 2, 3, 4, 5, 7]
- The existing diesel fuel infrastructure can simply and immediately transport and pump biodiesel instead of gasoline or petroleum based diesel. [1, 2, 3, 4, 5, 7]

Biodiesel is Safe and Easy to Use and Transport

- Biodiesel is the safest and most non toxic fuel that exists to transport. There are no volatile or dangerous fumes. The flash point is extremely high – 300 to 400 degrees F compared to 125 degrees F for petroleum based diesel. [1, 2, 3, 4, 5, 7]
- Pure biodiesel will degrade 85-88% in water within 28 days. That is the same degradation rate as dextrose (sugar). [4]
- Biodiesel is not corrosive, not reactive and does not contain a listed hazardous waste. CCR Title 22 Sec. 66261.22-24.
- Biodiesel is NOT regulated by DOT. It is shipped in plastic containers by Fed Ex, UPS, USPS as a non-volatile, non-flammable, non-toxic vegetable oil. [9]

Biodiesel is Considered to be a "developmental engine fuel" by the California Department of Food and Agriculture, Division of Measurements Standards ("DMS")

- DMS must issue a variance, which imposes reporting, warning and other requirements, to persons desiring to sell biodiesel blends above B20. Variances may only be granted to for sale to fleet-type centrally fueled vehicle and equipment users. Individuals may form "biodiesel user groups" with certain self-imposed rules and restrictions in order to be considered fleets under DMS rules. San Francisco Resolution 82-06.
- There are biodiesel user groups (e.g., San Francisco, Berkeley) who provide biodiesel to their members. There are currently no publicly accessible biodiesel filling stations in Oakland or San Francisco. One San Francisco gas station, Olympian on Cesar Chavez, recently added a pump selling a B-20 blend. A biodiesel filling station could generally consist of either a converted from below ground tank and a pump or a new aboveground tank and pump. San Francisco Resolution 82-06.

Sources:

1. National Renewable Energy Lab – www.nrel.gov
2. National Biodiesel Board – www.biodiesel.org
3. www.unitedsoybean.org
4. *Biomass Oil Analysis: Biomass Oils Displace up to 10 Billion Gallons by 2030, Research Needs and Recommendations*, National Renewable Energy Lab
5. *Wide Scale Biodiesel Production from Algae*, Michael Briggs, University of New Hampshire, Physics Department (revised August 2004).
6. www.eere.energy.gov
7. www.bayareabiofuels.com
8. Early DOE-NREL & EPA Research Summaries per Randal von Wedel, Ph.D.
9. Biodiesel 101: Emmission Reductions and Experience in SF, Randall von Wedel, Ph.D

Other Sources:

- www.aocs.org
- www.unh.edu/p2/biodiesel
- www.biodieselamerica.org
- www.fieldstofuel.org
- www.cytoculture.com

Appendix D.4
Public Outreach Recommendations Correspondence

Climate Protection Project Task Force

Proposal for Alameda Community Outreach Plan

Joyce Mercado
2901 Lincoln Ave., Alameda, CA 94510
(510) 521-5713 jm1@alamedanet.net
January 31, 2007

With 97% of the greenhouse gas emissions coming from non-municipal government sources, a multi-faceted, effective community outreach program will be essential to meet Alameda's target emissions reduction. The critical points for a successful community outreach program are to leverage multiple channels of communication to a wide range of community groups, be specific about actions we ask community members to take, relay personal benefits they would receive from such actions, and make it as simple as possible for people to act.

Communication should not be viewed as a one time event, but rather an ongoing activity to encourage constructive change. Leaders or a specific body should be assigned to oversee the implementation and maintenance of the community outreach program. Several communication channels and community groups to engage are suggested below, recognizing there are likely many more possibilities others could suggest.

Suggested Communication Channels:

1. **Alameda Journal, Alameda Sun & Alameda Magazine** - Suggest and provide information for an on-going "Alameda Goes Green" feature series of articles, which should cover high impact items identified by the task force. Each article should offer clear, specific actions for people to take, and should be tailored to Alameda (resources available locally, interview comments from local citizens, business owners, organizations, etc.)

2. **Additional Section in the City of Alameda's Website** - Building on the city's existing "Planet Alameda" concept, develop a more extensive "Alameda Goes Green" website. The main page should include the highlights of the ICLEI baseline measurements, Alameda's action plan highlighting leadership activities, and then lead the viewer to specific actions they can take. It should be organized into categories for different types of viewers: citizens at large, businesses, schools, youth groups, volunteer organizations, kids, etc. A top ten list should be prepared for each group, with further details and local resources provided for each action

suggested, as well as benefits of each action. For example, for the citizens at large category, the top priority action requested would be reducing single occupancy vehicle trips (based on 54% of Alameda's emissions from the transportation sector). Resources available include the Metropolitan Transportation Commissions (511.org or 511 via phone – trip planner for public transit), Bike Alameda (Non-profit Bicycling Advocacy Group in Alameda - Alameda bicycling map, safety classes, etc.), etc. Personal benefits to citizens for using public transit to highlight include less stressful commute, less money spent on gas, car maintenance and parking, being productive on the trip, etc. Benefits to highlight for biking include saving money on gas and car maintenance, excellent exercise and stress reduction, less hassle parking, and so on. To keep the site fresh and interesting, pictures and stories of successful actions taken by the community should be included periodically. In this manner Alameda's website could be an excellent resource to instigate behavior change throughout our community.

3. **Speaking at Various Venues** - Prepare standard presentations for different venues, and a list of volunteers to call upon to speak at events. Venues could include business organizations such as GABA, PSBA and WABA; individual businesses with large numbers of employees; places of worship; schools; charitable organization meetings, and youth groups.

4. **Facilitate Cross Communication Amongst Leaders of Community Groups** – To share best of breed ideas, lessons learned and so on, Alameda could establish links between leaders of various groups in town and facilitate kick-off as well as ongoing meetings. For example, Alameda could suggest that each public school PTA and private school Parent Committee across Alameda, create a "_____ School Goes Green" leader to coordinate climate protection actions at their respective schools. Then Alameda should set up a kick-off meeting amongst these school leaders with specific suggestions made to get the programs started (such as how to promote recycling and waste reduction at schools, energize walk & roll to school days, etc.), and find a volunteer within the group to continue bi-annual ongoing meetings, establish an email communication channel among the leaders to do downstream distribution to their respective schools, etc.

5. **E-Mail Distribution Lists/Quarterly Electronic Newsletter –** Community groups commonly set up distribution lists with their members. Alameda should have tailored specific requests for different types of groups, send the request to the leader of the organization for distribution to their members. For example, Alameda Little League sets up an email distribution list for all the parents. Alameda could request that the League suggest carpooling or biking to practices and games, and encourage families to take advantage of the recycling bins available at the games. Likewise once the "____ School Goes Green" leaders establish their own distribution list to share ideas between meetings, Alameda could take advantage of that distribution avenue for specific suggestions or requests for help from the

schools. Furthermore interested community members could sign up via the City's website to receive a newsletter via e-mail once a quarter, which could highlight local emission reduction success stories, upcoming community events such as tree plantings, reminders about bike valet parking availability at the Park Street Fair, upcoming bike classes, bike to work day, Earth Day, etc. .

6. **The Mayor's 4th of July Parade** – A future theme could be "Alameda Goes Green" which could help jumpstart community and business involvement, inspiring many creative entries.

7. **Annual Awards for Community Leaders** – Alameda could bestow certificates to honor and celebrate community members who have made exemplary contributions for reducing emissions.

Alameda Organizations to Engage for Positive Climate Impact Include:

1. **Youth Groups:** Develop list of specific climate protection actions the city would like youths to take on, consistent with their programs, such as tree planting at schools and parks. Work with the Alameda Council level of Boy Scouts, Girl Scouts, Girls Inc., etc. to solicit ideas and implement plans across youth groups. We should not underestimate the power of our youth in town.

2. **Schools:** Suggest to the PTAs and School Parent Committees across Alameda, that they create a "_____ School Goes Green" position to coordinate climate protection actions at their respective schools. Specific suggestions should be made to get the programs started (such as how to promote recycling and waste reduction).

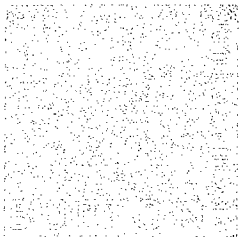
3. **Youth Sports Organizations:** Each youth sports organization in town (little league, basketball, soccer, etc.) develops an e-mail list to communicate key points to parents, and in many cases has a website as well. Before each sport season begins, we could contact the head of the organization and request that they encourage parents to carpool or bike to practices and games, set up recycling at games, etc.

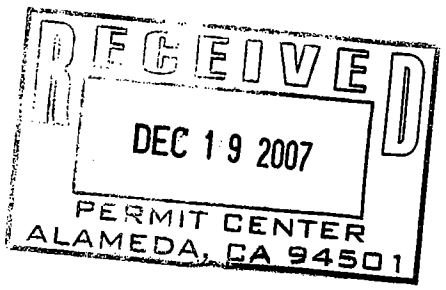
4. **Businesses:** A major focus should be convincing more local businesses to pursue an "Alameda Green Business" designation. A letter campaign in conjunction with meeting with local business organizations should be considered. Congratulatory certificates suitable for display at their business could be presented to businesses and a list of Green businesses could be included on Alameda's "Go Green" website encouraging Alamedans to patronize Alameda Green Businesses (an extra incentive for local businesses to go green). Success could be monitored by the increasing number of Alameda businesses achieving the Green Business Designation.

5. **Places of Worship:** The task force should develop a list of actions we could request of the leaders of the various places of worship in town, for their groups to take to promote climate protection (for example, car pooling, walking or biking to services; planting trees on their grounds; helping low income individuals with re-use donations of furniture, energy efficient appliances, weather proofing their homes; requesting that they ask members to view the "Alameda Goes Green Website", etc.)

6. **Bike Alameda:** This non-profit is heavily involved in promoting biking as a mode of transportation in Alameda. Major success factors for getting people to bike instead of drive, are to make individuals feel comfortable biking in traffic and to teach them how to address various issues such as how to carry items when biking, deal with the cold, etc. BikeAlameda offers safety classes on vehicular biking; maintains a website which contains useful information on how to address various concerns about using a bike instead of a car for transportation; and provides biking and walking maps of Alameda. Alameda should make efforts to increase awareness of BikeAlameda's website for helpful information and offerings.

7. **Alamedans for Climate Protection:** This grass-roots organization may be willing to provide volunteers to facilitate some of the suggested actions in this proposal





19 December 2007

To: Alameda Climate Change Task Force
From: David J. Burton

Subject: Climate Change Partnerships

As we move forward on developing our action plan, especially goals for reducing the residential carbon footprint, I'd like to float an idea to partner with one or more entities to encourage action by individuals and possibly raise funds to leverage even more action.

PROPOSAL

That the City of Alameda establishes partnerships with one or more businesses involved in the businesses of carbon offsets and/or waste reduction. The City of Alameda would encourage residents to sign on with these businesses and in return the city would receive a share of the proceeds. These proceeds could be designated to help offset costs for other city climate reduction activities such as establishing a city green building program or community outreach/advertising to publicize the city climate change action plan. In lieu of the city receiving direct financial benefits (if barred by law) the city could designate one or more non-profit groups as recipients of the revenue sharing – preferably groups involved in climate change related activities such as cycling advocacy, green building, transit, etc.

POTENTIAL PARTNERS

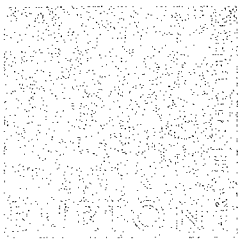
The two most promising avenues for partnership are groups involved in offering carbon offsets and groups involved in reducing the volume of junk mail.

Carbon Offsets

These groups offer carbon offsets ranging from \$5.50/ton CO_2 to \$15.00/ton CO_2. Proceeds from sale of offsets are invested in a variety of projects – solar installations, wind farms, reforestation, and bio-digesters (methane). Examples of companies and non-profits involved in this business include:

Terrapass	(www.terrapass.org)
Carbon Fund.org	(www.carbonfund.org)
Carbon Counter.org	(www.carboncounter.org)

2723 8th Street
Berkeley, CA 94710
p 510.848.5250
f 510.848.5386
www.burtonarchitect.com



Junk Mail Reduction

The intention of these organizations is to reduce the quantity of junk mail that you receive by 85%-90% and to get you off the mailing list of catalogs that you don't wish to receive. The benefit, in terms of our climate change action plan, are a) reduction of the quantity of junk entering the waste stream and recycling stream, b) a reduction in carbon emissions from the manufacture and transport of junk mail, and c) reduction of deforestation required to make paper for all of the junk mail. Examples of companies and non-profits involved in this business include:

41pounds.org	(www.41pounds.org)
Greendimes	(www.greendimes.org)

HOW WOULD THIS WORK?

The partner would establish a special code to be used by residents when they sign up for the companies services. For each subscription the company receives it donates to the city, or a designated non-profit, a portion of that subscription.

One example of how this could work comes from a discussion I had with a representative of 41pounds.org. Under her proposal, costs and disbursements would work this way:

Cost to enroll:	$41 (gets you off the junk mail lists for 5 years)
Donation:	$15 to designated for a specified non-profit group or groups
City Benefit:	If allowed, an additional, smaller, "referral fee" is returned to the City for each subscription

This is just one example of how such a program would work. Even if the city cannot benefit directly from working with these companies, I believe we should consider ways to make residents aware of such services, as they can be a fast and effective way to get residents involved as well as being a way for us to meet our carbon reduction goals.

Each of Us Can Make a Difference!
Help Alameda Reduce Global Warming!

Please post this checklist on your fridge at home and tackle a few changes at a time, checking them off as you complete projects and change habits. Before long you'll have worked your way through the list. In addition to reducing global warming, you'll save money and work a little more exercise into your daily life.

Transportation - Every Gallon of Gasoline Burned Produces 19.4 lbs of CO_2 (from US EPA)

The most critical change needed is to drive less!

- ☐ Start biking and/or walking for short trips
- ☐ Take public transit (relax - no fighting traffic)
- ☐ Arrange carpools (work, kid activities, clubs…)
- ☐ Offer/Ask to share rides with friends
- ☐ Work from home if possible ☐Consolidate trips

Drive efficiently when you have to drive:

- ☐ Clean out excess from trunk (do seasonally)
- ☐ Check tire air pressure each month
- ☐ Keep regular vehicle maintenance schedule
- ☐ Don't speed. Accelerate/Brake smoothly.
- ☐ Make your next vehicle purchase a fuel efficient one

Conserve Energy at Home

Heating/Cooling:

- ☐ Insulate attic (and base floor & walls if you can)
- ☐ Replace/clean furnace/AC filters at least every other month when in use (pick up a supply)
- ☐ Caulk/weather strip around windows & doors
- ☐ Lower (raise) thermometer 2 degrees in winter (summer) – Set automated thermostat
- ☐ Try a fan to cool instead of A/C
- ☐ Install insulated curtains or blinds

Lighting:

- ☐ Replace incandescent with florescent light bulbs

Water Heater:

- ☐ Install tank & hot water pipe insulation properly
- ☐ Set to 120 degrees Fahrenheit

Appliances:

- ☐ Clean refrigerator coils every 6 months
- ☐ Purchase only Energy Star® appliances
- ☐ Consider replacing refrigerator if >10 years old

Laundry:

- ☐ Only wash full loads
- ☐ Wash in cooler water; whites in warm not hot, etc.
- ☐ Clean dryer filter after each load
- ☐ Don't overheat clothes in dryer
- ☐ Install and use a clothes line

Doing Dishes:

- ☐ Only run full loads in dishwasher
- ☐ Turn off dishwasher after rinse cycle & air dry
- ☐ Hand wash in filled sink/basin when time allows

Miscellaneous:

- ☐ Buy reduced flow shower/faucet heads
- ☐ Turn things off when not in use (including lights & computers!) ☐ Take short showers
- ☐ Cook with lids on & use minimum amount of water when boiling/steaming. Microwave when you can.
- ☐ Unplug chargers & electronics when not in use
- ☐ Schedule a free AP&T home energy audit (see back)

Reduce, Reuse, Recycle

- ☐ Recycle paper, plastic, glass & metal in blue bin
- ☐ Put food/food soiled paper products in green bin
- ☐ Reuse mug instead of paper cup for coffee/tea
- ☐ Reuse cloth bags instead of paper/plastic bags
- ☐ Repair instead of replace if salvageable
- ☐ Buy used instead of new items when possible
- ☐ Buy products made from recycled materials
- ☐ Donate/sell gently worn, no longer wanted items
- ☐ Buy reusable bottles and refill with tap water (filtered if you like) instead of buying bottle water
- ☐ Sign up for Freecycle™ to give/get free items locally (see back) ☐ Pack no waste lunches
- ☐ Reduce junk mail to save trees and fuel. Consider a service like http://www.greendimes.com/.

Other Ways to Help

- ☐ Plant a tree (or 2 or 3 trees)
- ☐ Buy locally made/grown goods; shop locally
- ☐ Get 5 friends to post this list on their fridges
- ☐ Check websites on back for more ideas & help
- ☐ Use rake, broom & push mowers in your yard
- ☐ Write a constructive letter to the editor/elected official
- ☐ Create your own way to influence others to reduce global warming ☐ Try to fly less often

Checklist posted at www.bikealameda.org/info/Global_Warming_Checklist.pdf

Questions? Email Joyce Mercado at jm1@alamedanet.net

December 8, 2007

Helpful Resources Available for Alamedans!

Transportation

- **BikeAlameda** Nonprofit encourages everyday use of the bicycle in and around Alameda. Offers bike classes, bicycling and walking map of Alameda, safety materials, valet parking at major Alameda events and experts to address biking questions and concerns. (www.bikealameda.org)
- **Cycles of Change APC Community Bike Shop**: Offers earn-a-bike programs, refurbished bicycle sales, bicycle field trips, job training, library bike program and free bike knowledge and support to residents of Alameda and beyond. Accepts used bike donations! bikeshop@apcollaborative.org, http://www.apcollaborative.org/cycles.htm, www.cyclesofchange.org
- **Pedestrian Friendly Alameda:** Nonprofit dedicated to making Alameda a safe and enjoyable place to walk. Tips for pedestrian safety, walking advocacy programs including walk and roll to school days and keep kids alive, drive 25. http://www.pedfriendly.org/
- **AC Transit** Bus Schedules and Routes http://www.actransit.org/
- **Ferry Service:** Alameda/Oakland Ferry http://www.eastbayferry.com/, Harbor Bay Ferry http://www.alamedaharborbayferry.com/
- **511.org** Transit, traffic, bicycling, carpooling information. Call 511 or visit http://www.511.org/

Energy Conservation

- **AP&T Free Energy Audits** – Call 510-748-3947 to arrange for a free in home energy audit.
- **AP&T Energy Saving Tips** at www.alamedapt.com/electricity/tips.html
- **AP&T Residential Rebates Available** - http://www.alamedapt.com/electricity/res_savings.html
- **PG&E Residential Rebates Available** - http://www.pge.com/res/rebates/
- **PG&E energy saving tips/tools:** http://www.pge.com/res/rebates/energy_tools_resources/index.html
- **Hardware Stores in Alameda** – Purchase supplies for energy saving projects and friendly, knowledgeable folks are happy to give you advice on installation and usage. See Alameda phonebook.

Reduce, Reuse, Recycle

- **Alameda County Industries (ACI) –** Learn what goes in each bin, plus lots of educational materials. http://www.alamedacountyindustries.com/alameda/customer_center/residential_containers.html
- **StopWaste.org** – Comprehensive information on reducing the waste stream, including household hazardous waste disposal, bay friendly gardening, green building, environmental purchasing links, etc. http://www.stopwaste.org/home/index.asp
- **Alameda Freecycle** - This local group reduces waste by connecting people who are throwing away unwanted items with others seeking the same items. No item is too big or too small. ALL items must be 100% free! http://groups.yahoo.com/group/AlamedaFreecycle/
- **Donate Items to Local Charities: Alameda Goodwill Store** –2319 Lincoln Avenue, 337-2742; **AEF's Free Teacher Supply Store** (office, art/craft supplies, musical equipment) 748-4008 ext.105, info@AlamedaEducadtion.org); **Friends of the Alameda Free Library** (books, dvds, cds) http://www.friendsalamedafreelibrary.org/donating_books.html;
- **Universal Waste Management, Inc**. Free drop off of electronics for recycling at 721 37th Ave. Oakland (close to High Street or Fruitvale bridge). See www.unwaste.com for hours and details.
- **Antique and Resale Shops in Alameda** - See Alameda phonebook for listings.
- **Bay Area Salvage List** at http://www.ohmegasalvage.com/Showroom%20Pages/salvage_list.htm

Tree Planting

- **Alameda City Street Trees** – Home owners can request a street tree by e-mailing Todd Williams at twilliams@ci.alameda.ca.us their name, phone number and address.
- **Alameda Architectural Preservation Society** - If you join they offer members beautiful free trees and shrubs in 1-15 gal. containers. Chris Buckley at 510-523-0411 or cbuckley@alamedanet.net
- **The National Arbor Day Foundation –** Selecting and planting trees http://www.arborday.org/

Appendix E

Alameda Power & Telecom Preliminary Greenhouse Gas Reduction Action Plan

ALAMEDA
POWER & TELECOM

A Department of the City of Alameda

AGENDA ITEM NO: 6.D.1
MEETING DATE: 07/16/07

ADMINISTRATIVE REPORT NO. 2008-01

TO: Honorable Public Utilities Board

Submitted by:
Donald W. Rushton
Utility Planning Supervisor

FROM: Nico Procos
Utility Analyst

Approved by:
Girish Balachandran
General Manager

SUBJECT: Preliminary Greenhouse Gas Reduction Action Plan

Recommendation:

No action is recommended at this time. Staff requests that the Public Utilities Board (Board) provide its opinions and feedback on the following report on Alameda Power & Telecom's (Alameda P&T) initial plans in response to legislation requiring reductions in greenhouse gas emission in the State of California. This report includes an estimate of anticipated future requirements and lays the foundation for preliminary targets for Alameda P&T.

Background:

Assembly Bill 32

In September 2006, Governor Schwarzenegger signed into law State Assembly Bill 32 (AB 32), which requires reductions in greenhouse gas (GHG) emissions in the State of California to 1990 levels by 2020. Soon afterwards, the Governor issued Executive Order S-20-06 reinforcing the AB 32 timelines and adding a new goal of reducing GHG emissions to 2000 levels by 2010. While striving to meet the 2020 deadline, AB 32 also mandates certain quantifiable reduction milestones be met prior to the 2020 deadline. The California Air Resources Board (CARB), in cooperation from the California Public Utilities Commission (CPUC) and California Energy Commission (CEC), is assigned the responsibility of developing the plans and regulations to accomplish the goals as mandated under AB 32. While various methodologies for attaining reductions have been discussed, it is likely a major cornerstone of any reduction program will include a market-based cap-and-trade program.

Alameda P&T is actively participating in the CARB rulemakings via the Northern California Power Agency (NCPA), the California Municipal Utilities Association (CMUA) and in cooperation with other public power entities. While most of the specific requirements and enforcement mechanisms of AB 32 have yet to be determined, the goals of the law are fairly clear and can be approximated for Alameda P&T.

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The AB 32 schedule of CARB actions is summarized below:

CARB AB 32 Implementation Schedule

Date	Action
June 2007	*Recommended Early Action measures published*
October 2007	*Opens Rulemaking to establish reporting protocols*
January 2008	*Adopts regulations for mandatory greenhouse gas reporting. Defines 1990 baseline for CA and adopts this as the baseline for 2020.*
January 2009	*Adopts mechanisms of how emissions reductions will be achieved via regulations, market mechanisms and other actions.*
January 2010	*Adopts regulations to implement early action measures*
January 2011	*Completes major rulemakings for reducing GHGs including market mechanisms.*
January 2012	*GHG rules and market mechanisms take effect*

Senate Bill 1368

SB 1368 tasked the CEC to create and enforce an Emissions Performance Standard (EPS) for the State's publicly owned utilities. The legislation is directed towards resources with a 60% capacity factor or greater and a commitment of more than 5 years. CMUA and other public power entities have engaged the CEC in a collaborative effort to craft reasonable rules and regulations for implementing SB 1368. Considering its exemplary renewable portfolio, Alameda P&T has limited concerns with the new rules. As a result of the CEC proceeding, the EPS was raised from 1,000 pounds of CO2 equivalent per Megawatt-hour (MWh) to 1,100 pounds per MWh in recognition of the small-scale power plants public power entities may entertain. This may become important if Alameda P&T contemplates a small power plant in the future.

California Municipal Utilities Association Greenhouse Gas Principles

At the Board meeting on July 17, 2006, the Board adopted the CMUA Greenhouse Gas Principles. Some of the major provisions of the principles are:

- Develop a plan to reduce greenhouse gases and report this to the California Energy Commission.
- Support mandatory greenhouse gas emissions reporting.
- Provide measurement and verification.

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- Continue to aggressively pursue renewable energy supply.
- Pursue all feasible and cost-effective energy efficiency.
- Quantify the financial risk of greenhouse gas producing resources.
- Facilitate distributed generation/combined heat and power projects.
- Consider "environmental justice" issues.
- Not limit investment in energy efficiency to public benefits funds.
- Provide education and assistance for customers related to greenhouse gas reduction.

Since the Board's original action on this item, staff has begun the process of integrating the various requirements of the principles into one cohesive plan. Considering the various GHG related efforts, it is likely some common denominators may be identified as starting points towards achieving the underlying goal of reducing GHGs.

Alameda Climate Protection Task Force

The City of Alameda has created the Alameda Climate Protection Task Force to study and make recommendations related to climate protection and citywide greenhouse gas emissions reductions. The task force partnered with the International Council on Local Environmental Initiatives (ICLEI) under the Cities for Climate Protection Campaign to conduct a Baseline Greenhouse Gas Emissions Inventory for the City of Alameda. Results of that study were published in January 2007 and include the following highlights:

- Transportation currently accounts for 161,000 tons of CO2 equivalent GHG emissions per year, or 53% of the citywide GHG emissions.
- Natural Gas use accounts for 105,000 tons per year, or 35% of citywide emissions.
- Electricity generation accounts for 36,000 tons per year, or 12% of citywide emissions.
- Total citywide greenhouse gas emissions are forecast to increase from 303,000 tons in 2005 to 329,867 tons in 2020, absent additional efforts to reduce those emissions.
- Electricity generation GHG emissions are forecast to increase from 36,000 tons in 2005 to 40,000 tons in 2020.
- Alameda P&T's vehicle fleet currently emits 295 tons per year of GHG emissions, about 0.1% of total citywide emissions.

Alameda P&T now has a fairly detailed understanding of the GHG emissions associated with the power portfolio. In sum, the citizens can claim to be served from electricity that is not only 80% renewable, but also emits 60% fewer GHG emissions than electricity provided from Pacific Gas and Electric (PG&E). This fact reduces Alameda citizen's per capita GHG emissions to the point where they are by far the lowest of all Bay Area cities participating in the ICLEI process.

The ICLEI report breaks out GHG emissions by government activities and goes on to state that "by proactively reducing emissions generated by its own activities, the Alameda government takes a visible leadership role in the effort to address climate change. This is important for inspiring local action in Alameda as well as for inspiring action in other communities."

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Discussion/Analysis:

Greenhouse Gas Reduction Action Plan

Most of the specific requirements and enforcement mechanisms for AB32 have yet to be developed. For example, it is not yet known whether the reduction targets for electricity will be load or generation based, or if the targets to meet 1990 emissions levels will be utility specific or statewide averages. Since the overall goals of the law are fairly clear, these individual utility targets can be approximated using reasonable assumptions, and a preliminary plan can be provided to progress toward meeting the goals and to facilitate early actions and accomplishments.

This preliminary plan will be adjusted over time as additional information becomes available and as things change. Updates will be provided to the Board in conjunction with required reports as changes occur.

Alameda P&T Historic and Projected GHG Emissions:

During the development of the input to the ICLEI study process, Alameda P&T staff provided information on generation and emission levels from its various generating resources. This data is available for the NCPA projects through the agency's participation in the California Climate Action Registry (CCAR). Based on historical and projected generation information, staff has developed the table included as Exhibit A. This table shows GHG emissions estimates for 1990, 2000, 2005 and projections for 2010 and 2020 calculated based on projected loads and known resource additions over the timeframe. Detailed information was not readily available for some resources for the year 1990, so these estimates are rough and may require further refinement. Known resource additions include only those new landfill gas projects that have been contracted for, but which constitute early actions in meeting greenhouse gas reductions. Additional requirements beyond those met by existing and planned generation resources are assumed to be met by generic market purchases, or system energy, with statewide average emissions characteristics from the ICLEI report baseline year 2005, which are far higher than Alameda's current average.

The projection for 2020 in Exhibit A shows approximately 54,000 tons of GHG from electricity generation. Staff's assessment is approximately 30% higher than ICLEI's projections of 40,000 tons. While the difference could be considered significant, it is fully explained by the use of the more recent and higher load forecast adopted by the Board in early 2007. Staff believes these numbers may vary some in the coming months as the analysis is refined and perfected. Nevertheless, compared to estimated 1990 levels of 86,000 tons, this projection indicates a 36% reduction without any further actions to reduce emissions. The reduction is due to a mixture of changed circumstances, such as reduced consumption, and active resource planning. Some of the major factors include:

- The load in the City dropped by 25% with the closure of the of the Alameda Naval Air Station in 1997. The loss of this load reduced the need to procure system energy to meet load obligations. System energy is derived from unknown sources and is assigned a resource mix weighting every year by the CEC depending on the system power

consumed in California less the energy claimed by various energy service providers from specific sources. While Alameda P&T largely procures energy from specific sources, an example of a non-specific source is the power purchase agreement with Morgan Stanley, for which the exact source is not known. System energy is a disproportionate contributor to the GHG calculation due to the resource mix, which contains coal and natural gas. For example, in 2005 system energy comprised 23% of total Alameda P&T resources, yet contributed 83% of the overall GHG emissions.

- By 2010 and beyond Alameda P&T will obtain approximately 25% of its power from landfill gas units. Landfill gas contracts are treated as zero emission resources and act to offset any need to purchase GHG intensive system energy. From a GHG per MWh perspective, Alameda P&T emissions decline dramatically from 1990 levels due to both the Naval Air Station closure and the renewable content of the portfolio (see table below).

Alameda P&T Greenhouse Gas Emissions per MWh

Year	Estimated GHG Emissions (Tons/MWh)	Percent difference from baseline year (1990)
1990*	0.176	-
2000	0.070	-60 %
2005	0.100	-43 %
2010	0.059	-67 %
2020	0.112	-36 %

*Estimated. All data not available yet.

- It is important to highlight the variable role hydro-electric generation plays in yearly GHG emissions. The 1990 baseline year was in the midst of a drought period and as such zero emitting hydro resources were replaced with high emitting system purchases. The ultimate effect being that for many entities the baseline year would be inflated when compared to an average hydro year. This effect could happen at any time with fluctuating hydro conditions and impact the ability to predict GHG emission on a year-to-year basis.

Of course, much of this analysis assumes that the standard adopted by the State will be based on utility specific emissions and not statewide or regional averages, and is load-based as opposed to source-based with limitations on individual generators. These may prove to be incorrect assumptions and additional reductions may be required - and probably should be pursued to appropriately participate in the statewide goal. On the latter note, staff would like to highlight that while percentage and/or gross reductions are noble goals, Alamedans have a long-standing

commitment to renewable resources and have had a lower GHG footprint per capita for years, if not decades, from their electric use. Any proposals to further reduce GHGs must be cost effective and balance the need to attain a level that few others can possibly hope to reach, nor may desire to reach given the potential impact on the goal of maintaining competitive rates.

Assuming the preliminary results are correct and the 2020 and 2010 goals are easily achievable, if not surpassed altogether, staff believes there is value in setting a special circumstance goal for utilities such as Alameda P&T that far surpass the rest of the field. Staff is considering proposing a 2020 reduction to 2005 levels, which would require a reduction of 28% from the projected level of 54,231 tons down to 39,173 tons. While additional reductions might be more difficult for Alameda P&T than for other utilities because of past accomplishments, such reductions may be possible. Some of these actions are already contemplated or in preliminary development stages. Staff believes that Alameda P&T should pursue additional greenhouse gas emissions reduction goals based on the spirit of both the City's interest in reducing future GHG emissions and the Governor's climate initiative, and also because of the unique geographic location of the City of Alameda.

Additional Actions for GHG Reductions

There are a number of options for reducing future GHG emissions, including:

- *Energy Efficiency;*

  It is staff's intent to provide a ten-year plan for energy efficiency to the Board for their consideration in September. Such a plan is now required under California law. Initial indications are that cost effective and achievable energy efficiency efforts should be targeted at 2% of Alameda's total electricity load by the end of the ten-year period. These accomplishments will provide significant reductions in offsetting higher emitting system energy purchases and would reduce GHG emissions by approximately 6% by 2020.

- *New Low Emission Resource(s);*

  Alameda P&T is currently investigating a variety of different resources that could meet the dual requirements to maintain a balanced portfolio and meeting GHG reduction targets. These include but are not limited to:
  - Solar installation(s) via SB 1 or other venues
  - Clean burning generation that runs on low GHG natural gas or biogas
  - Additional landfill gas generation
  - Wind project at the Geysers
  - Wave/Tidal generation in the Bay Area

  All of these resources have the ability to offset any requirement to purchase system energy and thus help reduce overall GHG emissions. Zero emission renewable resources will reduce such emissions by about 3,100 tons per year for each MW of base-load generation, a 6% reduction in projected GHG emissions for the year 2020.

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- *Vehicle Emissions Reductions;*

  Alameda P&T has purchased a number of hybrid electric/gas passenger vehicles with very good gas mileage. While estimates of the emissions savings have not yet been made, they will be incorporated as part of the City's climate action plan. Over time, replacement of fleet vehicles with more efficient newer vehicles will also help reduce emissions. Alameda P&T expects to participate in the American Public Power Association's hybrid electric/gas utility truck research and development project. As the plug-in hybrid technology emerges, Alameda P&T's electric vehicle charging discount rate may become more of a factor. Staff sees numerous opportunities in the renewed interest in the electric vehicle for GHG reductions and providing opportunities for municipal and private entities to convert to low emission vehicles.

- *Other GHG Reduction Measures;*

  Natural gas represents 35% of city greenhouse gas emissions. Actions to reduce or replace natural gas use with Alameda P&T's clean electricity supply would provide significant GHG savings. These might include conversion to solar hot water heating or the use of air source heat pumps. For example, Alameda P&T might offer rebates for the installation of solar hot water systems if the customer utilized electric backup heating. Air source heat pumps offer very high operating efficiencies with overall costs that are competitive with natural gas space heating, and provide the ability to reduce GHG-producing natural gas usage for home or business heating in Alameda. These concepts will be developed further and presented in future reports.

Coordination With City Action Plan

Staff intends to work with other City personnel and the Alameda Climate Protection Task Force in developing the action plan for the City. Task Force activities will certainly influence Alameda P&T's plan. This coordination will take place over the next several months as the plans evolve, and will be reported to the Board.

California Climate Action Registry

Many diverse groups have joined the California Climate Action Registry (CCAR) to quantify their GHG emissions and begin the process of understanding the impact of GHG emissions. Due to their prior expertise on the issue of quantifying GHGs, CCAR is referenced in AB 32 as a guideline for the CARB to use in their role as AB 32 administrator. Having resources quantified by CCAR ensures the general framework approach was approved by CCAR and is of regulatory quality and afforded State recognition. The advantages include influencing the regulatory process, becoming familiar with the process, and having the right data available for Alameda's system that is consistent with other entities.

While NCPA is currently a member of CCAR, staff recommends exploring registration with CCAR.

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Budget/Financial Considerations:

The Board has included $100,000 in Alameda P&T's budget for Fiscal Year 2007-2008 to cover additional actions to meet the greenhouse gas reduction targets.

Exhibit:

A. Estimated Historic and Projected Greenhouse Gas Emissions

Estimated Historical and Projected GHG Emissions

	1990		2000		2005		2010		2020	
Power Source	GWh	CO2e (tons)	GWh	CO2e (tons)	GWh	CO2e (tons)	GWh	CO2e (tons)	GWh	CO2e (tons)
Geothermal	207	5,711	202	5,450	160	4,400	145	3,980	111	3,043
Calaveras Hydro	22	2	73	6	69	7	56	6	56	6
Western Hydro	36	0	70	0	54	0	37	0	37	0
CTs	1	123	0	0	10	1,954	17	3,324	17	3,425
Landfill gas	0	0	0	0	6	0	103	0	103	0
Wind	0	0	0	0	0	0	26	0	26	0
CA System Energy	228	81,031	64	23,332	92	32,811	51	18,086	134	47,756
TOTAL	**494**	**86,868**	**409**	**28,788**	**391**	**39,173**	**433**	**25,397**	**483**	**54,231**

EXHIBIT A

ITEM NO: 6.D.9

Appendix F
Stopwaste.org's Model of Environmentally Preferable Purchasing Policy

ENVIRONMENTALLY PREFERABLE PURCHASING
MODEL POLICY

PREPARED BY STOPWASTE.ORG (ALAMEDA COUNTY WASTE MANAGEMENT AUTHORITY AND SOURCE REDUCTION & RECYCLING BOARD)

1.0 STATEMENT OF POLICY

It is the policy of [organization] to:

- institute practices that reduce waste by increasing product efficiency and effectiveness,
- purchase products that minimize environmental impacts, toxics, pollution, and hazards to worker and community safety to the greatest extent practicable, and
- purchase products that include recycled content, are durable and long-lasting, conserve energy and water, use agricultural fibers and residues, reduce greenhouse gas emissions, use unbleached or chlorine free manufacturing processes, are lead-free and mercury-free, and use wood from sustainably harvested forests.

2.0 PURPOSE

This Policy is adopted in order to:

- conserve natural resources,
- minimize environmental impacts such as pollution and use of water and energy,
- eliminate or reduce toxics that create hazards to workers and our community,
- support strong recycling markets,
- reduce materials that are landfilled,
- increase the use and availability of environmentally preferable products that protect the environment,
- identify environmentally preferable products and distribution systems,
- reward manufacturers and vendors that reduce environmental impacts in their production and distribution systems or services,
- create a model for successfully purchasing environmentally preferable products that encourages other purchasers in our community to adopt similar goals.

3.0 SPECIFICATIONS

3.1 Source Reduction

3.1.1 [Organization] shall institute practices that reduce waste and result in the purchase of fewer products whenever practicable and cost-effective, but without reducing safety or workplace quality.

3.1.2 [Organization] shall purchase remanufactured products such as toner cartridges, tires, furniture, equipment and automotive parts whenever practicable, but without reducing safety, quality or effectiveness.

3.1.3 [Organization] shall require all equipment bought after the adoption of this policy to be compatible with source reduction goals as referred to in this section (3.1), when practicable.

3.1.4 All buyers shall consider short-term and long-term costs in comparing product alternatives, when feasible. This includes evaluation of total costs expected during the time a product is owned, including, but not limited to, acquisition, extended warranties, operation, supplies, maintenance, disposal costs and expected lifetime compared to other alternatives.

3.1.5 Products that are durable, long lasting, reusable or refillable are preferred whenever feasible.

3.1.6 [Organization] requests vendors to eliminate packaging or use the minimum amount necessary for product protection, to the greatest extent practicable.

3.1.7 Packaging that is reusable, recyclable or compostable is preferred, when suitable uses and programs exist.

3.1.8 Vendors shall be encouraged to take back and reuse pallets and other shipping and packaging materials.

3.1.9 Suppliers of electronic equipment, including but not limited to computers, monitors, printers, and copiers, shall be required to take back equipment for reuse or environmentally safe recycling when [organization] discards or replaces such equipment, whenever possible.

3.1.10 [Organization] shall consider provisions in contracts with suppliers of non-electronic equipment that require suppliers to take back equipment for reuse or environmentally safe recycling when [organization] discards or replaces such equipment, whenever practicable.

3.1.11 All documents shall be printed and copied on both sides to reduce the use and purchase of paper, whenever practical.

3.2 Recycled Content Products

3.2.1 All products for which the United States Environmental Protection Agency (U.S. EPA) has established minimum recycled content standard guidelines in the Agency's Comprehensive Procurement Guidelines, such as those for printing paper, office paper, janitorial paper, construction, landscaping, parks and recreation, transportation, vehicles, miscellaneous, and non-paper office products, shall contain the highest postconsumer content practicable, but no less than the minimum recycled content standards established by the U.S. EPA Guidelines.

3.2.2 Copiers and printers purchased shall be compatible with the use of recycled content and remanufactured products.

3.2.3 In accordance with California Public Contract Code, Sec. 10409, [organization] shall purchase re-refined lubricating and industrial oil for use in its vehicles and other

equipment, as long as it is certified by the American Petroleum Institute (API) as appropriate for use in such equipment.

3.2.4 When specifying asphalt concrete, aggregate base or portland cement concrete for road construction projects, [organization] shall use recycled, reusable or reground materials when practicable.

3.2.5 [Organization] shall specify and purchase recycled content transportation products, including signs, cones, parking stops, delineators, channelizers and barricades, which shall contain the highest postconsumer content practicable, but no less than the minimum recycled content standards established by the U.S. EPA Comprehensive Procurement Guidelines.

3.2.6 All pre-printed recycled content papers intended for distribution that are purchased or produced shall contain a statement that the paper is recycled content. Whenever feasible, the statement should indicate the percentage of postconsumer recycled content it contains.

3.3 Energy and Water Savings

3.3.1 Where applicable, energy-efficient equipment shall be purchased with the most up-to-date energy efficiency functions. This includes, but is not limited to, high efficiency space heating systems and high efficiency space cooling equipment.

3.3.2 When practicable, [organization] shall replace inefficient interior lighting with energy-efficient equipment.

3.3.3 When practicable, [organization] shall replace inefficient exterior lighting, street lighting and traffic signal lights with energy-efficient equipment. Exterior lighting shall be minimized where possible to avoid unnecessary lighting of architectural and landscape features while providing adequate illumination for safety and accessibility.

3.3.4 All products purchased by [organization] and for which the U. S. EPA Energy Star certification is available shall meet Energy Star certification, when practicable. When Energy Star labels are not available, [organization] shall choose energy-efficient products that are in the upper 25% of energy efficiency as designated by the Federal Energy Management Program.

3.3.5 [Organization] shall purchase water-saving products whenever practicable. This includes, but is not limited to, high-performance fixtures like toilets, low-flow faucets and aerators, and upgraded irrigation systems.

3.4 Green Building

3.4.1 All building and renovations undertaken by [organization] shall follow Green Building Practices for design, construction, and operation, where appropriate, as described in the LEED™ Rating System.

3.5 Landscaping

3.5.1 All landscape renovations, construction and maintenance performed by [organization], including workers and contractors providing landscaping services for [organization], shall employ Bay-Friendly Landscaping or sustainable landscape management techniques for design, construction and maintenance whenever possible, including, but not limited to, integrated pest management, grasscycling, drip irrigation, composting, and procurement and use of mulch and compost that give preference to those produced from regionally generated plant debris and/or food waste programs.

3.5.2 Plants should be selected to minimize waste by choosing species for purchase that are appropriate to the microclimate, species that can grow to their natural size in the space allotted them, and perennials rather than annuals for color. Native and drought-tolerant plants that require no or minimal watering once established are preferred.

3.5.3 Hardscapes and landscape structures constructed of recycled content materials are encouraged. [Organization] shall limit the amount of impervious surfaces in the landscape, wherever practicable. Permeable substitutes, such as permeable asphalt or pavers, are encouraged for walkways, patios and driveways.

3.6 Toxics and Pollution

3.6.1 To the extent practicable, [organization] shall purchase, or require janitorial contractors to supply, industrial and institutional cleaning products that meet Green Seal certification standards for environmental preferability and performance.

3.6.2 To the extent practicable, [organization] shall purchase, or require janitorial contractors to supply, vacuum cleaners that meet the requirements of the Carpet and Rug Institute "Green Label" Testing Program – Vacuum Cleaner Criteria, are capable of capturing 96% of particulates 0.3 microns in size, and operate with a sound level less than 70dBA. Where possible and as applicable, other janitorial cleaning equipment shall be capable of capturing fine particulates, removing sufficient moisture so as to dry within 24 hours, operate with a sound level less than 70dBA, and use high-efficiency, low-emissions engines.

3.6.3 The use of chlorofluorocarbon and halon-containing refrigerants, solvents and other products shall be phased out and new purchases of heating/ventilating/air conditioning, refrigeration, insulation and fire suppression systems shall not contain them.

3.6.4 All surfactants and detergents shall be readily biodegradable and, where practicable, shall not contain phosphates.

3.6.5 When maintaining buildings and landscapes, [organization] shall manage pest problems through prevention and physical, mechanical and biological controls. [Organization] may either adopt and implement an organic pest management policy and practices or adopt and implement an Integrated Pest Management (IPM) policy and practices using the least toxic pest control as a last resort.

3.6.6 When maintaining buildings, the [organization] shall use products with the lowest amount of volatile organic compounds (VOCs), highest recycled content, and low or no formaldehyde when practicable when purchasing materials such as paint, carpeting, adhesives, furniture and casework.

3.6.7 [Organization] shall reduce or eliminate its use of products that contribute to the formation of dioxins and furans. This includes, but is not limited to:

- Purchasing paper, paper products, and janitorial paper products that are unbleached or that are processed without chlorine or chlorine derivatives, whenever possible.

- Prohibiting purchase of products that use polyvinyl chloride (PVC) such as, but not limited to, office binders, furniture, flooring, and medical supplies whenever practicable.

3.6.8 [Organization] shall purchase products and equipment with no lead or mercury whenever possible. For products that contain lead or mercury, [organization] shall give preference to those products with lower quantities of these metals and to vendors with established lead and mercury recovery programs.

3.6.9 [Organization] shall specify that desktop computers, notebooks and monitors purchased meet, at a minimum, all Electronic Product Environmental Assessment Tool (EPEAT) environmental criteria designated as "required" as contained in the IEEE 1680 Standard for the Environmental Assessment of Personal Computer Products, whenever practicable.

3.6.10 When replacing vehicles, [organization] shall consider less-polluting alternatives to diesel such as compressed natural gas, bio-based fuels, hybrids, electric batteries, and fuel cells, as available.

3.7 Forest Conservation

3.7.1 To the greatest extent practicable, [organization] shall not procure wood products such as lumber and paper that originate from forests harvested in an environmentally unsustainable manner. When possible, [organization] shall give preference to wood products that are certified to be sustainably harvested by a comprehensive, performance-based certification system. The certification system shall include independent third-party audits, with standards equivalent to, or stricter than, those of the Forest Stewardship Council certification.

3.7.2 [Organization] encourages the purchase or use of previously used or salvaged wood and wood products whenever practicable.

3.8 Bio-Based Products

3.8.1 Vehicle fuels made from non-wood, plant-based contents such as vegetable oils are encouraged whenever practicable.

3.8.2 Paper, paper products and construction products made from non-wood, plant-based contents such as agricultural crops and residues are encouraged whenever practicable.

3.8.3 Bio-based plastic products that are biodegradable and compostable, such as bags, film, food and beverage containers, and cutlery, are encouraged whenever practicable.

3.8.4 Compostable plastic products purchased shall meet American Society for Testing and Materials (ASTM) standards as found in ASTM D6400-04. Biodegradable plastics used as coatings on paper and other compostable substrates shall meet ASTM D6868-03 standards.

3.8.5 Proof of compliance with ASTM standards for compostable, biodegradable and degradable plastic products shall be provided by vendors of such products, upon request. One acceptable proof of compliance for compostable plastic products will be certification by the Biodegradable Products Institute (BPI).

4.0 PRIORITIES

4.1 The health and safety of workers and citizens is of utmost importance and takes precedence over all other policies.

4.2 [Organization] has made significant investments in developing a successful recycling system and recognizes that recycled content products are essential to the continuing viability of that recycling system and for the foundation of an environmentally sound production system. Therefore, to the greatest extent practicable, recycled content shall be included in products that also meet other specifications, such as chlorine free or bio-based.

4.3 Nothing contained in this policy shall be construed as requiring a department, purchaser or contractor to procure products that do not perform adequately for their intended use, exclude adequate competition, or are not available at a reasonable price in a reasonable period of time.

4.4 Nothing contained in this policy shall be construed as requiring the [organization], department, purchaser or contractor to take any action that conflicts with local, state or federal requirements.

5.0 IMPLEMENTATION

5.1 The [Director of Purchasing, Director of Finance, other responsible director] shall implement this policy in coordination with other appropriate [organization] personnel.

5.2 As applicable, successful bidders shall certify in writing that the environmental attributes claimed in competitive bids are accurate. In compliance with State law, vendors shall be required to specify the minimum or actual percentage of recovered and postconsumer material in their products, even when such percentages are zero.

5.3 Upon request, buyers making the selection from competitive bids shall be able to provide justification for product choices that do not meet the environmentally preferable purchasing criteria in this policy.

5.4 Purchasers shall include businesses certified by the Bay Area Green Business Program in requests for products and services.

5.5 Vendors, contractors and grantees shall be encouraged to comply with applicable sections of this policy for products and services provided to the [organization], where practicable.

6.0 PROGRAM EVALUATION

6.1 The [Director of Finance, Director of Purchasing, other position responsible for implementing this policy] shall periodically evaluate the success of this policy's implementation.

7.0 DEFINITIONS

7.1 "American Society for Testing and Materials" means ASTM International, an open forum for the development of high quality, market relevant international standards use around the globe.

7.2 "Bay Area Green Business Program" is a partnership of governments and businesses that certifies the environmental performance of government agencies and businesses.

7.3 "Bay-Friendly Landscaping" means working with the natural ecosystems of the San Francisco Bay Area to foster soil health, to reduce runoff and pollution, prevent and reuse plant waste, conserve water and other natural resources. Bay-Friendly Landscaping practices are described in the *Bay-Friendly Landscape Guidelines*, by StopWaste.Org.

7.4 "Bio-Based Products" means commercial or industrial products (other than food or feed) that utilize agricultural crops or residues but does not include products made from forestry materials.

7.5 "Biodegradable plastic" means the degradation of the plastic must occur as a result of the action of naturally occurring microorganisms.

7.6 "Biodegradable Products Institute" (BPI) is a multi-stakeholder association of key individuals and groups from government, industry and academia, which promotes the use, and recycling of biodegradable polymeric materials (via composting). BPI does not create standards but certifies products that demonstrate they meet the requirements in ASTM D6400 or D6868, based on testing in an approved laboratory.

7.7 "Buyer" means anyone authorized to purchase or contract for purchases on behalf of [organization] or its subdivisions.

7.8 "The Carpet and Rug Institute" (CRI) is the national trade association representing the carpet and rug industry. CRI has developed and administered the "Green Label" indoor air quality testing and labeling program for carpet, adhesives, cushion materials and vacuum cleaners. The "Green Label Plus" testing program incorporates additional requirements to meet California's Collaborative for High Performance Schools low-emitting materials criteria.

7.9 "Chlorine free" means products processed without chlorine or chlorine derivatives.

7.10 "Compostable plastic" means plastic that is biodegradable during composting to yield carbon dioxide, water and inorganic compounds and biomass, at a rate consistent with other known compostable materials and leaves no visually distinguishable or toxic residues.

7.11 "Contractor" means any person, group of persons, business, consultant, designing architect, association, partnership, corporation, supplier, vendor or other entity that has a contract with [organization] or serves in a subcontracting capacity with an entity having a contract with [organization] for the provision of goods or services.

7.12 "Degradable plastic" means plastic that undergoes significant changes in its chemical structure under specific environmental conditions.

7.13 "Dioxins and furans" are a group of chemical compounds that are classified as persistent, bioaccumulative, and toxic by the U.S. Environmental Protection Agency (EPA).

7.14 "Energy Star" means the U.S. EPA's energy efficiency product labeling program.

7.15 "Energy Efficient Product" means a product that is in the upper 25% of energy efficiency for all similar products, or that is at least 10% more efficient than the minimum level that meets Federal standards.

7.16 "Electronic Product Environmental Assessment Tool" (EPEAT) is a procurement tool to help institutional purchasers in the public and private sectors evaluate, compare and select desktop computers, notebooks and monitors based on their environmental attributes.

7.17 "Federal Energy Management Program" is a program of the Department of Energy that issues a series of *Product Energy Efficiency Recommendations* that identify recommended efficiency levels for energy-using products.

7.18 The "Forest Stewardship Council" is a global organization that certifies responsible, on-the-ground forest management according to rigorous standards developed by a broad variety of stakeholder groups.

7.19 "Green Building Practices" means a whole-systems approach to the design, construction, and operation of buildings and structures that helps mitigate the environmental, economic, and social impacts of construction, demolition, and renovation. Green Building Practices such as those described in the LEED™ Rating System, recognize the relationship between natural and built environments and seeks to minimize the use of energy, water, and other natural resources and provide a healthy productive environment.

7.20 "Green Seal" is an independent, non-profit environmental labeling organization. Green Seal standards for products and services meet the U.S. EPA's criteria for third-party certifiers. The Green Seal is a registered certification mark that may appear only on certified products.

7.21 "Integrated Pest Management (IPM)" is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties. Pesticides are used only after monitoring indicates they are needed according to established guidelines, and treatments are made with the goal of removing only the target organism. Pest control materials are selected and applied in a manner that

minimizes risks to human health, beneficial and nontarget organisms, and the environment.

7.22 "LEED™ Rating System" means the most recent version of the Leadership in Energy and Environmental Design (LEED™) Commercial Green Building Rating System, or other related LEED™ Rating System, approved by the U.S. Green Building Council and designed for rating new and existing commercial, institutional, and high-rise residential buildings.

7.23 "Organic Pest Management" prohibits the use and application of toxic chemical pesticides and strives to prevent pest problems through the application of natural, organic horticultural and maintenance practices. All pest control products shall be in keeping with, but not limited to, those products on the approved list of California Certified Organic Foods (CCOF).

7.24 "Postconsumer Material" means a finished material which would normally be disposed of as a solid waste, having reached its intended end-use and completed its life cycle as a consumer item, and does not include manufacturing or converting wastes.

7.25 "Practical" and "Practicable" mean whenever possible and compatible with local, state and federal law, without reducing safety, quality, or effectiveness and where the product or service is available at a reasonable cost in a reasonable period of time.

7.26 "Preconsumer Material" means material or by-products generated after manufacture of a product is completed but before the product reaches the end-use consumer. Preconsumer material does not include mill and manufacturing trim, scrap, or broke which is generated at a manufacturing site and commonly reused on-site in the same or another manufacturing process.

7.27 "Recovered Material" means fragments of products or finished products of a manufacturing process, which has converted a resource into a commodity of real economic value, and includes preconsumer and postconsumer material but does not include excess resources of the manufacturing process.

7.28 "Recycled Content" means the percentage of recovered material, including preconsumer and postconsumer materials, in a product.

7.29 "Recycled Content Standard" means the minimum level of recovered material and/or postconsumer material necessary for products to qualify as "recycled products."

7.30 "Recycled Product" means a product that meets [organization's] recycled content policy objectives for postconsumer and recovered material.

7.31 "Remanufactured Product" means any product diverted from the supply of discarded materials by refurbishing and marketing said product without substantial change to its original form.

7.32 "Reused Product" means any product designed to be used many times for the same or other purposes without additional processing except for specific requirements such as cleaning, painting or minor repairs.

7.33 "Source Reduction" refers to products that result in a net reduction in the generation of waste compared to their previous or alternate version and includes durable, reusable and remanufactured products; products with no, or reduced, toxic constituents; and products marketed with no, or reduced, packaging.

7.34 "U.S. EPA Guidelines" means the Comprehensive Procurement Guidelines established by the U.S. Environmental Protection Agency for federal agency purchases as of May 2002 and any subsequent versions adopted.

7.35 "Water-Saving Products" are those that are in the upper 25% of water conservation for all similar products, or at least 10% more water-conserving than the minimum level that meets the Federal standards.

8.0 EFFECTIVE DATES

8.1 This policy shall take effect on [date].